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FLOOD INSURANCE STUDY

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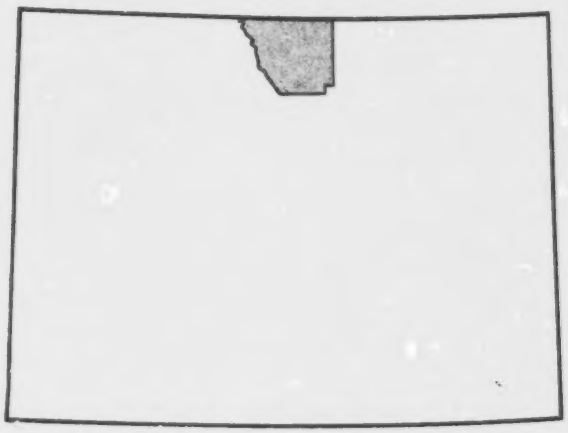

LARIMER COUNTY, COLORADO
UNINCORPORATED AREAS

VOLUME 1 OF 3

REVISED: MARCH 18, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER - 080101

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Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study has been prepared to revise and update a previous Flood Insurance Study/Flood Insurance Rate Map for the unincorporated areas of Larimer County, Colorado. This information will be used by Larimer County to update existing flood plain regulations as part of the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). The information will also be used by local and regional planners to further promote sound land use and flood plain development.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Gingery Associates, Inc., for FEMA, under Contract No. H-4017. This study was completed in December 1977.

The revised hydrologic and hydraulic analyses for Dry Creek were also performed by Gingery Associates, Inc., as reported in Major Drainageway Planning, Dry Creek, Fort Collins, Larimer County, Colorado (Reference 1). This work was completed in February 1985.

The revised hydrologic and hydraulic analyses for Big Thompson River upstream of Lake Estes, Fall River, and Black Canyon Creek were performed by Simons, LI & Associates, Inc., for FEMA under Contract No. EMW-83-C-1167. This work was completed in April 1985.

1.3 Coordination

The identification of streams requiring detailed study was accomplished at a meeting attended by representatives of the study contractor, FEMA, and the Larimer County Planning Department on April 20, 1976. After the Big Thompson River flood of July 31, 1976, the study scope was increased to include the Big Thompson Canyon area.

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The U.S. Army Corps of Engineers (COE), Omaha District, was contacted and provided flood plain data on the Big Thompson and the Cache La Poudre Rivers for use in preparing the Flood Insurance Study.

During the work by the study contractor, flood elevations, flood boundaries, and floodway delineations were reviewed with community officials.

Final coordination meetings were held in Loveland and Fort Collins on November 29 and 30, 1977, respectively. These meetings were attended by representatives of Larimer County, FEMA, the study contractor, and the general public. The results of these meetings have been incorporated into this report.

Streams requiring additional detailed study were identified at a meeting attended by representatives of the study contractor, FEMA, Larimer County, and the Town of Estes Park in April 1983. The results of this additional work were reviewed at a meeting attended by representatives of these groups.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Larimer County, Colorado. The area of study is shown on the Vicinity Map (Figure 1).

The following streams were studied in detail: Big Thompson River; Big Thompson Tributaries 1, 2, 3, and 4; Buckhorn Creek; Cedar Creek; Dark Gulch; Dickson Gulch; Dry Gulch; Glade Road Overflow; Long Gulch; Noel's Draw; North Fork Big Thompson River; Quillan Gulch; Rabbit Gulch; Redstone Creek; Bobcat Gulch; Miller Fork; Fox Creek; West Creek; Devils Gulch; Cache La Poudre River; Dry Creek; Boxelder Creek; Fall River; Fish Creek; and Black Canyon Creek.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through 1990.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Larimer County.

The upper and lower reaches of the Cache La Poudre River northwest and southeast of Fort Collins, the Little Thompson River, Cooper Slough, Boxelder Creek from its confluence with the Cache La Poudre River to approximately 0.8 mile north of the Larimer and Weld Canal, and portions of Dry Creek were studied by approximate methods.

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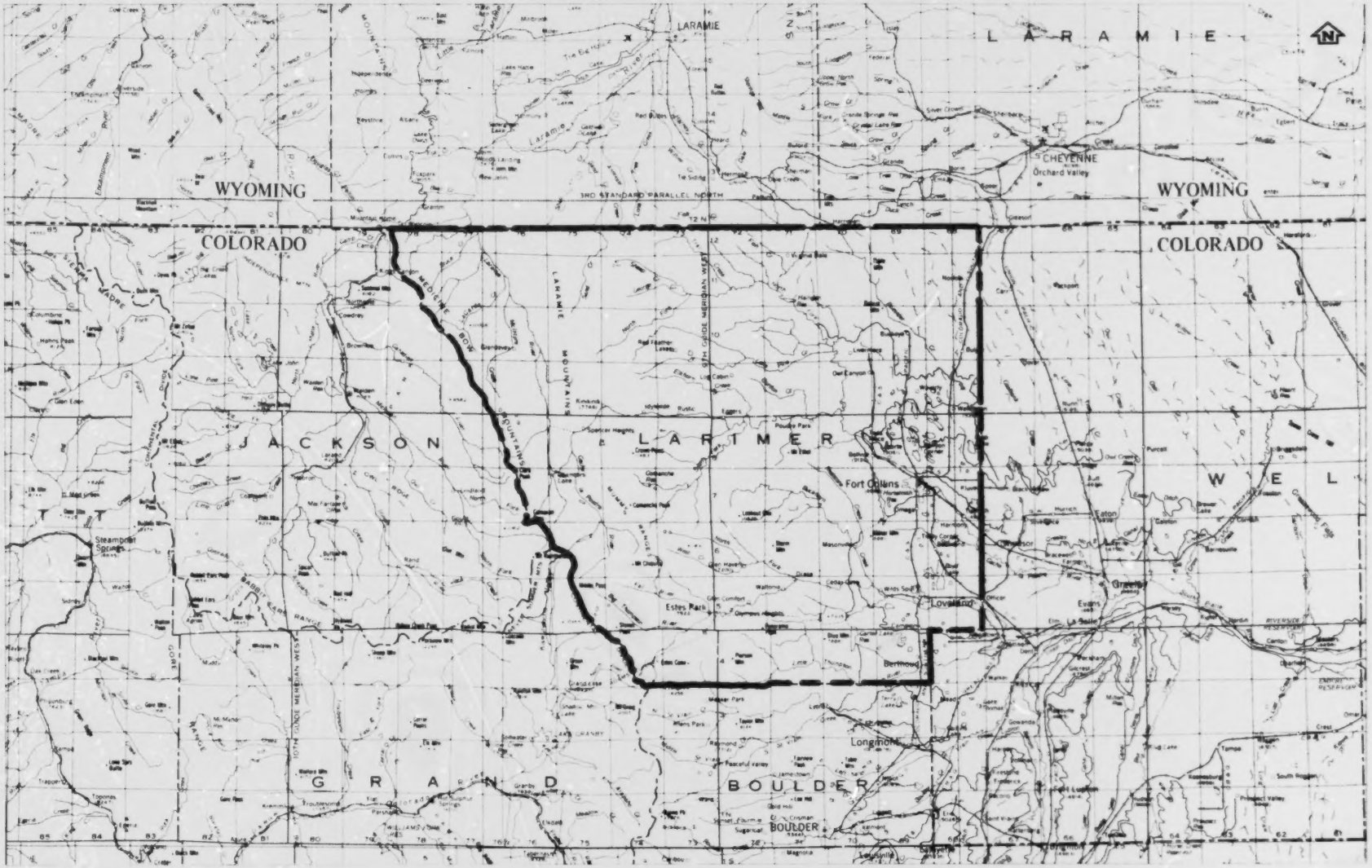

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

APPROXIMATE SCALE

16 0 16 32 48 MILES

VICINITY MAP

2.2 Community Description

Larimer County is located in north-central Colorado, bounded by the Continental Divide to the west, Wyoming to the north, Weld County to the east, and Boulder County to the south. The county encompasses approximately 2,614 square miles, of which approximately 50 percent is publicly owned. The terrain ranges from steep mountainous areas in the west to gently rolling plains in the east.

Historically, the economy has consisted of irrigated farming in the southeast and dryland farming and grazing in the northeast, although the eastern section is rapidly urbanizing. The industry in the western portion of the county consists mainly of tourism, with some ranching and timber operations.

Larimer County had a 1980 population of 149,184. This represents a 66-percent increase over the 1970 population of 89,900 (Reference 2).

The climate varies from the mountains in the west to the eastern plains. The average annual temperature in the western part of the county is in the lower 40°F range, with annual precipitation of approximately 16 inches. The eastern portion of the county has an average temperature of 50°F and annual precipitation of approximately 14 inches (Reference 3).

The studied section of the Big Thompson River is approximately 41 miles long. The river originates in the Rocky Mountains, and the basin extends to the Continental Divide at an elevation of 14,250 feet on Long's Peak. The Big Thompson River flows in an easterly direction through the southern part of Larimer County. Considerable residential development has taken place along the riverbanks, especially in the narrow canyon area. Channel slopes range from approximately 18 feet per mile in the area near Loveland to 130 feet per mile through the narrows. The soils in the Big Thompson River study area consist of Fluvaquents-Fluvents, Haploborolls-Camborthids-Argiborolls, and Argiborolls-Rock Outcrop Associations (Reference 4).

The studied section of the North Fork Big Thompson River is approximately 9.8 miles long, with the lower study limit being at the confluence with the Big Thompson River at Drake. The average channel width through the studied section is 25 feet, and the channel slope averages 132 feet per mile. Soils consist of North Rock Outcrop and Haploborolls-Camborthids-Argiborolls Associations (Reference 4).

Numerous small tributaries were included in this study. The sections studied along these tributaries are generally less than 0.5 mile. The stream channels are narrow and have slopes averaging 400 feet per mile. Two larger tributaries to the North Fork Big Thompson River, West Creek and Devils Gulch, near Glen Haven were also studied.

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West Creek and Devils Gulch have average channel widths of 25 feet, and their slopes are 90 feet per mile and 400 feet per mile, respectively. The soils along West Creek and Devils Gulch are of the Haploborolls-Camborthids-Argiborolls Associations (Reference 4).

Buckhorn Creek flows east and south through Larimer County and joins the Big Thompson River approximately 5 miles west of Loveland. Redstone Creek flows south on the east side of the Buckhorn Creek basin and joins Buckhorn Creek at Masonville. Development in the two basins is confined to those areas where the valley width permits it, and consists mostly of farming units. The channel slope of Buckhorn Creek in the studied section is approximately 58 feet per mile, and the Redstone Creek channel slope averages approximately 185 feet per mile. Soils in the Buckhorn Creek and Redstone Creek basins are of the Fluvaquents-Fluvents, Argiborolls-Rock Outcrop, and Arguistolls-Haplustolls Associations (Reference 4).

Boxelder Creek flows in a southerly direction through Larimer County past the west side of the Town of Wellington. Very little development has occurred in the flood plain within the county. The Boxelder Creek watershed, approximately 32 miles long with an average width of 8 miles, flows from an altitude of 7,720 feet at its headwaters in Wyoming to 4,860 feet at its confluence with the Cache La Poudre River. Geological formations exposed within the watershed consist of rocks and sediments ranging from Precambrian to Quaternary in age, and the soils in the basin are of the Fluvaquents-Fluvents and Arguistolls-Haplustolls Associations (Reference 4).

Dry Creek is a tributary of the Cache La Poudre River that flows in a southeasterly direction through Larimer County to its confluence east of the City of Fort Collins. Development along the stream consists of sparsely populated farm and range lands north and east of Fort Collins. The channel is approximately 3 to 4 feet deep and 10 to 15 feet wide through the lower part of the study and 6 to 12 feet deep and 60 to 80 feet wide in the upstream areas. The stream channel gradient within the section studied is approximately 18 feet per mile. The soils within the Dry Creek flood plain are of the Fluvaquents-Fluvents and Otero-Nelson Associations (Reference 4).

Fish Creek flows north through Larimer County to its confluence with the Big Thompson River at Lake Estes in the Town of Estes Park. Fall River flows southeast through the county and joins the Big Thompson River in Estes Park. The channels of both streams are well defined and generally narrow, with cobble streambeds and heavy vegetation encroaching upon channel banks. The flood plains are largely undeveloped for both streams, and the soils are of the Argiborolls-Rock Outcrop and Cyroboralfs-Rock Outcrop Associations (Reference 4).

The Cache La Poudre River flows in a southeasterly direction through Larimer County. Development along the Cache La Poudre River flood plain is minor at the present time with only a few residential and

commercial structures. The channel in the studied section is approximately 160 feet wide and 7 feet deep, with the gradient varying from 28 feet per mile in the upper parts of the study area and 16 feet per mile in the lower parts. The soils within the Cache La Poudre River study area consist of the Fluvaquents-Fluvents Association (Reference 4).

Black Canyon Creek was studied from its confluence with Big Thompson River upstream approximately 1.4 miles to McGregor Avenue. The upstream 0.4 mile of this study reach is in Larimer County.

2.3 Principal Flood Problems

Major floods on the streams are caused by intense rainfall from localized thunderstorms over the basins. The floods caused by such events will characteristically have high peak discharges of short duration for all of the mountain-area streams. Floods on the streams in the plains areas are normally of a longer duration with less velocity and considerable channel storage. Flooding can also occur as a result of rapid spring snowmelt. These floods characteristically are of longer duration.

Significant floods have occurred on the streams within the county in past years. The most significant flood within the county occurred on the Big Thompson River, July 31 to August 1, 1976. This flood was one of the worst natural disasters in the history of Colorado. Intense precipitation over an approximate 60-square-mile area between Lake Estes and Drake, with rainfall depths up to 12 inches, generated a flood discharge of approximately 31,200 cubic feet per second (cfs) at the mouth of the canyon. This flood is known to have taken 139 lives. Property damage was estimated at $16.5 million, while hundreds of people were left homeless. Over 200 residential structures were damaged or destroyed by the flood, while nearly 1,200 land parcels were adversely affected (Reference 5). Floods on the Big Thompson River caused damage in 1864 and 1894, but no discharge or damage estimates were recorded. Floods also occurred on the Big Thompson River in 1919, 1923, 1945, and 1949 with discharges of 8,000, 7,000, 7,600, and 7,750 cfs, respectively. The 1976 flood is depicted in Figures 2 through 6.

Notable floods on the Cache La Poudre River in the study area occurred in 1844, 1864, 1884, 1891, 1904, 1923, and 1930. There were apparently three large floods of comparable size in 1864, 1891, and 1904. All of these floods peaked near 21,000 cfs. The 1904 flood was probably the worst flood in terms of dollar damage (Reference 6). The snowmelt runoff from 1983 produced a peak near 7,000 cfs. This was the highest peak in 53 years. Extensive channel damage occurred because of the prolonged duration of the runoff.

Buckhorn Creek has flooded on several occasions. The largest floods were in 1923, 1938, 1948, and 1951 with discharges of 10,500, 10,200, 5,750 and 14,000 cfs, respectively (Reference 7).

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Figure 2. Along the Big Thompson River in the Cedar Mount Area After the Flood of July 31-August 1, 1976

Figure 3. Along the Big Thompson River in the Cedar Mount Area After the Flood of July 31-August 1, 1976

Figure 4. View of Destruction Along the Big Thompson River Below Drake After the Flood of July 31-August 1, 1976

Figure 5. View of Destruction on Devils Gulch After the Flood of July 31-August 1, 1976

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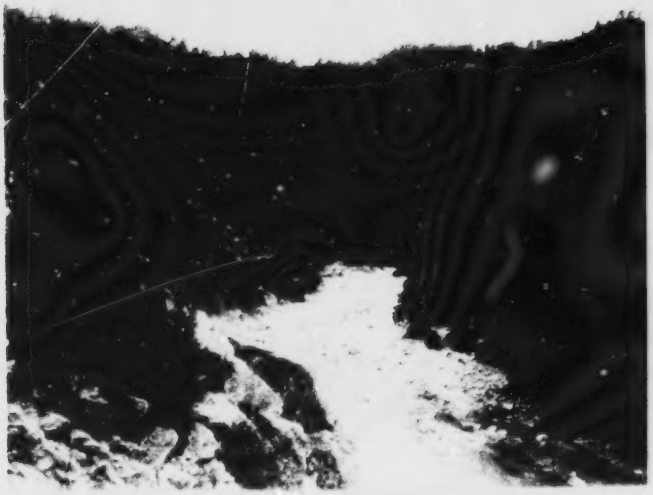

Figure 6. Grandpa's Retreat Area of the Big Thompson River After the Flood of July 31-August 1, 1976

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Documentation of floods on Redstone Creek is relatively sparse. However, an intense rainstorm on September 10, 1938, caused flooding in some of the lower areas of the flood plain (Reference 7).

Floods have been recorded in the Boxelder Creek watershed on 13 occasions since 1900. On August 1, 1961, a storm with a frequency of 50 to 100 years caused an estimated $76,150 in damage in the Wellington vicinity. In May and June 1976, two overlapping 25-year storms caused an estimated $46,100 in damage and took four lives in the Wellington vicinity (Reference 8).

No record exists of a major flood on Dry Creek in the study area. The absence of even minor flooding is generally attributed to the network of irrigation canals that have some capacity for intercepting Dry Creek flows (Reference 1).

Fish Creek and the Fall River have not often been subject to major flooding, although the Fall River did overflow its banks in 1965 and cause some damage. In July 1982, extensive damage occurred throughout the Town of Estes Park because of the failure of Lawn Lake Dam located in the headwaters of the Fall River.

2.4 Flood Protection Measures

There are no structures along the Big Thompson River or its tributaries that provide a major reduction in floodflows. Numerous levees along the river will contain a high frequency flood (10 and 25 years) but provide little protection against the 100-year flood.

In 1970 the U.S. Soil Conservation Service (SCS) proposed to construct five floodwater detention structures in the Boxelder Creek basin. Two of these structures were completed when discharges were computed for the detailed analysis for Boxelder Creek. There are no flood-control structures located in the Cooper Slough basin (Reference 9).

Although they are not actual flood-control structures, Dry Creek has several lakes and storage reservoirs that reduce the contributing drainage area by approximately 13 percent. The network of irrigation canals in the Dry Creek basin has some capacity for intercepting Dry Creek flows (Reference 1). Douglas Lake, also an irrigation reservoir, significantly reduces peak discharges .

Numerous irrigation canals cross the Dry Creek channel and directly intercept drainage flows, as mentioned previously. Several of these canals, including the Larimer and Weld Canal (Eaton Ditch), the Larimer County Canal, the Terry Inlet, the Poudre Valley Canal, and the North Poudre Ditch, have large enough flow capacity to significantly affect flood magnitudes on Dry Creek. For the more frequent flood events, the Larimer and Weld Canal (Eaton Ditch), the Larimer County Canal, and the Terry Inlet were assumed to intercept all Dry Creek flows reaching their channels (Reference 1).

As development within the basin continues, these canals will intercept greater flows on a more frequent basis.

This will increase the probability of sporadic overflows from the canals, which can cause severe damage, particularly if an embankment fails. For this reason, separation of drainage flows and irrigation flows should be considered for at least the lower frequency events (Reference 1).

There are no flood-control structures on the Cache La Poudre River in the study area, although there are two irrigation dams on the North Fork Cache La Poudre River. The effect of the two dams is considered negligible in the study area. There are no flood-control structures that reduce discharges on Buckhorn Creek, Redstone Creek, Fish Creek, Black Canyon Creek, or the Fall River.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

The discharges on the Big Thompson River, the North Fork Big Thompson River, and their major tributaries were developed based upon a combination of gage records and regression equations contained in the Colorado Water Conservation Board's Technical Manual No. 1, prepared by the U.S. Geological Survey (Reference 10). The loca-

tions of the stream gages analyzed and their respective years of record are as follows: Drake gage located on the Big Thompson River (47 years), Big Thompson River below Lake Estes (17 years), Big Thompson River above Lake Estes (27 years), and North Fork Big Thompson River at Drake (30 years). The gage records were analyzed using the log-Pearson Type III distribution as recommended in the U.S. Water Resources Council Bulletin 17 (Reference 11), and the discharges were adjusted as recommended in Technical Manual No. 1 (Reference 10).

The Storm Water Management Model (SWMM) (Reference 12) was used to determine discharges on drainage basins that are representative of the smaller Big Thompson River and North Fork Big Thompson River tributaries. These discharges were plotted on semi-log paper to develop discharge-drainage area curves for the region. These curves were entered with the drainage areas of the smaller tributaries, and the appropriate discharges were tabulated.

Discharges for the lower portion of the Big Thompson River near Loveland were provided by the COE in their Flood Plain Information report published in 1971 (Reference 13).

The discharges for Buckhorn Creek, Redstone Creek, and Black Canyon Creek were calculated based upon the regression equations found in Technical Manual No. 1 (Reference 10). Parameters needed for the regression equations were taken from U.S. Geological Survey topographic maps at a scale of 1:250,000 (Reference 14), SCS County Soils Maps (Reference 15) and County Land Use Maps (Reference 16). For Buckhorn Creek and Redstone Creek, discharges for each design point were calculated for the portions of the basin above 7,500 feet and below 7,500 feet, and the largest discharge at each point was used.

The SCS performed the hydrologic analyses on Boxelder Creek in the vicinity of the Town of Wellington while compiling their Watershed Work Plan (Reference 8). Precipitation values were taken from National Weather Service Technical Papers 40 and 49 (Reference 8). Soil information was taken from an unpublished detailed soil survey completed by the SCS for Larimer County. The SCS Technical Release No. 20 (Reference 17) was used to develop and route hydrographs based upon the information gathered.

The SCS computed discharges on Boxelder Creek were based upon none of the proposed reservoirs being completed and all three proposed reservoirs above Wellington being complete. At the time of this study, only two of the reservoirs had been constructed, so the assumed storage for the third structure (B-2) was eliminated based upon the information supplied by the SCS.

Discharges for Dry Creek were computed using the SWMM (Reference 12). The drainage basin was divided into 190 subbasins that drained into 139 channel sections. Basins were selected so that hydrographs would be available at critical design points, particularly at irri-

gation canal crossings and at on-stream reservoirs (Reference 1). Precipitation information was obtained from the National Oceanic and Atmospheric Administration Atlas (Reference 18). The 500-year rainfall, not available from the atlas, was extrapolated assuming a Gumbel probability distribution (Reference 1).

Discharges for Fish Creek and the Fall River were computed based upon records of stream gages located on the two streams. The Fish Creek gage has 30 years of record, and the Fall River gage has 9 years of record. These records were analyzed using a log-Pearson Type III distribution as recommended in U.S. Water Resources Council Bulletin 17 (Reference 11). These discharges were weighted with those obtained using regression equations from the Colorado Water Conservation Board's Technical Manual No. 1 (Reference 10).

Peak discharges for the 10-, 50-, and 100-year floods along the Cache La Poudre River were provided by the COE, Omaha District (Reference 6). The 500-year discharges were estimated by straight line extrapolation of the 10-, 50-, and 100-year floods provided by the COE.

The SWMM (Reference 12) was used to compute discharges for approximate flooding on Boxelder Creek and Cooper Slough in the vicinity east of the City of Fort Collins (Reference 9).

Peak discharge-drainage area relationships for streams studied in detail are shown in Table 1.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross sections for the Big Thompson River and its tributaries were taken from topographic maps at a scale of 1:2,400, with a contour interval of 2 feet (References 19, 20, and 21) and field surveys. These tributaries include the North Fork Big Thompson River, Big Thompson River Tributaries 1, 2, 3, and 4, Long Gulch, Rabbit Gulch, Quillan Gulch, West Creek, Fox Creek, Dark Gulch, Cedar Creek, Devils Gulch, Bobcat Gulch, Dry Gulch, Noel's Draw, Dickson Gulch, and Miller Fork. Bridges and culverts were measured to determine size and structural geometry.

Roughness coefficients (Manning's "n") were estimated by field inspection. Channel values ranged from 0.035 to 0.045, and overbank values ranged from 0.050 to 0.060.

Water-surface elevations were computed using the COE HEC-2 computer program (Reference 22). Water-surface profiles for the lower portion of the Big Thompson River (near Loveland) were provided by the COE

Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Big Thompson River					
At County Road 9E	515.00	4,700	12,300	19,000	44,000
At Mouth of Canyon (Drake Gage)	304.00	4,250	11,500	16,900	38,900
At Drake Below North Fork	274.00	3,700	7,850	10,400	19,200
At Drake Above North Fork	191.00	2,750	5,700	7,500	13,600
At Lake Estes Below Dry Gulch	156.00	2,250	3,800	4,700	7,200
At Crags Drive in Estes Park	87.00	980	1,340	1,460	1,760
Big Thompson River Tributary 1					
At Mouth	0.31	260	390	570	900
Big Thompson River Tributary 2					
At Mouth	1.63	750	1,250	1,650	2,400
Big Thompson River Tributary 3					
At Mouth	1.51	720	1,200	1,550	2,300
Big Thompson River Tributary 4					
At Mouth	0.25	200	340	500	800
Buckhorn Creek					
At Mouth	142.90	6,844	15,090	20,244	36,000
At Masonville Below Redstone Creek	122.50	6,321	13,593	18,059	32,000
At Masonville Above Redstone Creek	92.00	4,674	10,321	13,862	24,000
Cedar Creek					
At Mouth	19.75	2,460	6,530	9,400	20,000
Dark Gulch					
At Mouth	1.10	560	950	1,250	1,850
Dickson Gulch					
At Mouth	2.10	970	1,600	1,900	2,650

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Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Dry Gulch					
At Mouth	6.25	1,200	2,150	2,600	4,100
Long Gulch					
At Mouth	2.00	1,000	1,660	2,000	2,870
Noel's Draw					
At Mouth	3.41	1,050	1,800	2,200	3,400
North Fork Big Thompson River					
At Drake	83.00	1,500	4,100	6,100	14,100
At Glen Haven Below Devils Gulch	51.00	1,450	3,400	4,400	11,500
Quillan Gulch					
At Mouth	3.01	1,050	1,750	2,100	3,200
Rabbit Gulch					
At Mouth	3.45	1,050	1,800	2,200	3,400
Redstone Creek					
At Mouth	30.50	4,187	9,217	12,370	22,500
Bobcat Gulch					
At Mouth	2.73	1,000	1,700	2,050	3,000
Miller Fork					
At Mouth	13.67	1,350	2,650	3,350	6,300
Fox Creek					
At Mouth	7.35	1,200	2,200	2,750	4,800

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Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
West Creek					
At Mouth	24.60	1,500	3,100	4,000	8,000
Devils Gulch					
At Mouth	0.91	540	900	1,200	1,800
Cache La Poudre River					
At State Highway 14	1,100.0	9,586	15,829	18,893	27,000
At U.S. Highway 287	1,100.0	10,051	16,526	19,622	28,000
Dry Creek					
At Mouth	65.0	400[1]	1,180[1]	1,950[1]	3,300[1]
At U.S. Highway 287	60.0	720	1,900	2,900	6,000
Boxelder Creek					
At Downstream Limit	116.30	3,950	6,550	8,200	12,000
Fall River					
At Estes Park Corporate Limits	37.30	450	610	680	830
Fish Creek					
At Estes Park Corporate Limits	13.40	105	208	400	840
Black Canyon Creek					
At Estes Park Corporate Limits	9.3	120	190	210	290

[1]Discharges reflect flow losses to the Cache La Poudre River

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in their Flood Plain Information report of December 1971 (Reference 13). These elevations were modified by hand calculations where channel modifications and new construction required it.

Cross sections for Buckhorn Creek and Redstone Creek were taken from topographic maps at a scale of 1:2,400, with a contour interval of 2 feet (Reference 23). Bridges were measured to determine size and structural geometry. Roughness coefficients were estimated by field inspection. The channel value for both streams was 0.035, and the overbank values ranged from 0.045 to 0.100. Water-surface elevations were computed using the COE HEC-2 computer program (Reference 22).

Cross section data for Boxelder Creek were taken from topographic maps at a scale of 1:2,400, with a contour interval of 2 feet (Reference 24). Bridges and culverts were measured to obtain elevation data and structural geometry. Roughness coefficients were estimated by field inspection. The channel value used in this report was 0.035, and the overbank values ranged from 0.030 to 0.040. Water-surface elevations were computed using the COE HEC-2 computer program (Reference 22).

Cross sections on Dry Creek were taken from topographic maps at a scale of 1:1,200, with a contour interval of 2 feet (Reference 25). Roughness coefficients were estimated by field inspection. Channel values ranged from 0.03 to 0.05, and overbank values ranged from 0.015 to 0.10. Water-surface profiles were computed using the COE HEC-2 computer program (Reference 22).

Cross section data for Fish Creek and the Fall River were taken from topographic maps at a scale of 1:1,200, with a contour interval of 2 feet (Reference 26) and were supplemented with field-surveyed cross sections. Roughness coefficients were estimated by field inspection. The channel value was 0.04, and the overbank values ranged from 0.03 to 0.08. Water-surface profiles were computed using the COE HEC-2 computer program (Reference 22).

Cross sections for the Cache La Poudre River were field surveyed by the COE, Omaha District (Reference 6). Roughness coefficients were estimated by field inspection. Channel values ranged from 0.035 to 0.045, and overbank values ranged from 0.045 to 0.080.

Flood elevations for the 10-, 50-, and 100-year floods on the Cache La Poudre River were computed by the COE, Omaha District (Reference 6). Water-surface elevations for the 500-year flood were estimated based on rating curves prepared for each cross section using the COE information.

Cross section data for Black Canyon Creek were taken from topographic maps at a scale of 1:1,200 with a contour interval of 2 feet (Reference 19) and were supplemented with field-surveyed cross

sections. Roughness coefficients were estimated by field inspection. The channel value was 0.04 and the overbanks were 0.06. Water-surface profiles were computed using the COE HEC-2 computer program (Reference 22).

Cross section data for the Fall River were field-surveyed. A water supply dam located in the upper watershed failed in July 1982 and changed the channel. Roughness coefficients were estimated by field inspection. The channel roughness ranged from 0.04 to 0.05 and the overbank roughness ranged from 0.03 to 0.06. Water-surface profiles were computed using the COE HEC-2 program (Reference 22).

Approximate flood elevations for the Little Thompson River were determined from a COE Flood Plain Information report (Reference 27). Approximate flood elevations for the Cache La Poudre River were determined from two COE Flood Plain Information reports (References 6 and 28).

Approximate flood elevations for Boxelder Creek and Cooper Slough in the vicinity east of the City of Fort Collins were computed using the COE HEC-2 computer program (Reference 22), as reported in the study prepared by Simons, Li & Associates, Inc. (Reference 9).

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Starting water-surface elevations for the Big Thompson River upstream of Lake Estes and Fish Creek were the maximum normal operating level of Lake Estes. Starting water-surface elevations for Dry Creek were computed assuming critical depth. On Fall River, Black Canyon Creek, Boxelder Creek, and Cooper Slough, starting water-surface elevations were computed using the slope-area method.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks in the vicinity of Estes Park are shown on the maps; other elevation mark data can be obtained from the Larimer County Planning Commission.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program (NFIP) encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

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4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at scales of 1:2,400, 1:1,200, and 1:6,000, with contour intervals of 2 and 4 feet (References 19, 20, 21, 23, 24, 25, 26, and 29).

On the Little Thompson River, approximate flood boundaries were delineated using aerial photographs at a scale of 1:12,000 (Reference 27). Approximate flood boundaries for the Cache La Poudre River were delineated from two COE Flood Plain Information reports (References 6 and 28).

Approximate flood boundaries for Boxelder Creek and Cooper Slough in the vicinity east of the City of Fort Collins were delineated using topographic maps at a scale of 1:1,200 with a contour interval of 2 feet (Reference 30).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year flood plain boundary is shown.

Approximate 100-year flood plain boundaries in some portions of the study area were taken directly from the Flood Hazard Boundary Map (Reference 31).

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway

is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways for this study were divided into two categories based upon the location of the stream. The mountain area criteria were based upon the channel of the stream plus all flood plain areas where the depth of flooding was 18 inches or greater and the floodway fringe area was the area where flooding depths were 18 inches or less and velocities were 3 feet per second or less (Figure 7). The plains area criteria were based upon the criteria of equal-conveyance reduction from each side of the flood plain with a 0.5-foot limitation on flood height, provided that hazardous velocities are not produced (Figure 8).

The floodways for the Big Thompson River upstream of Lake Estes and Black Canyon Creek were based upon the criteria of equal conveyance reduction from each side of the flood plain with a 1.0-foot limitation of increased flood height, provided that hazardous velocities are not produced (Figure 8). The floodway for the Fall River was based upon the criteria of equal conveyance reduction from each side of the flood plain with a 1.0-foot limitation on increased energy grade line.

It was decided for portions of the Dry Creek floodway to permit encroachment to a point where the maximum rise in the 100-year water-surface elevation would be no greater than 1.0 foot as computed in the Dry Creek report (Reference 1).

The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figures 7 and 8.

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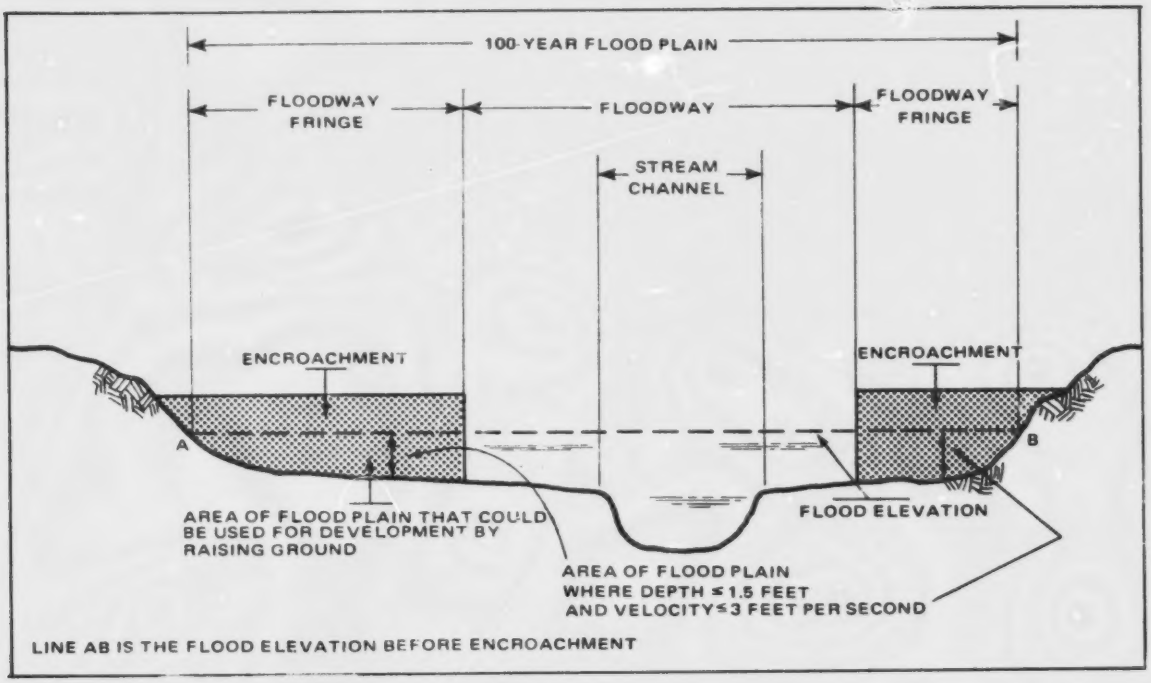
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
ENCROACHMENT
ENCROACHMENT
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION
AREA OF FLOOD PLAIN WHERE DEPTH ≤ 1.5 FEET AND VELOCITY ≤ 3 FEET PER SECOND
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT

Figure 7. Floodway Schematic for Mountain Area Streams

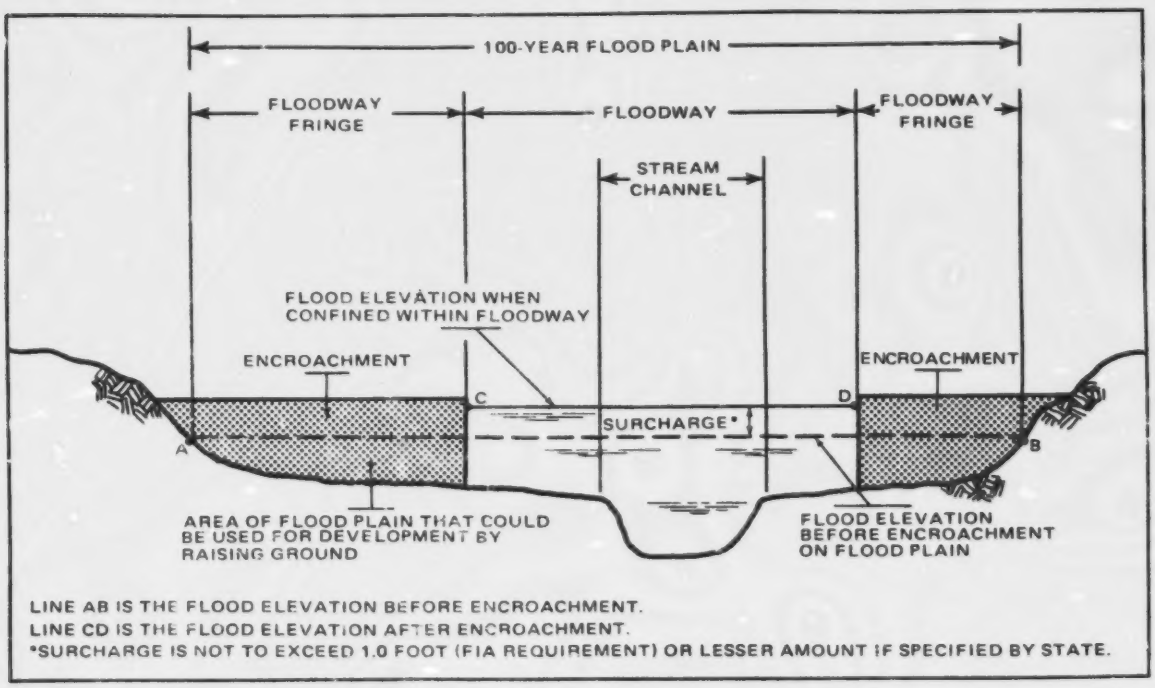
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT.
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT.
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

Figure 8. Floodway Schematic for Plains Area Streams

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Big Thompson River							
A	123,670	80	963	19.7	4880.0	4880.0	0.0
B	123,720	1547	4559	4.2	4880.6	4880.1	0.5
C	124,335	1803	7470	2.5	4881.0	4880.5	0.5
D	125,250	1073	3577	5.3	4881.1	4881.1	0.0
E	126,060	1004	3454	5.5	4882.7	4882.3	0.4
F	127,930	300/620[2]	3164	6.0	4890.8	4890.3	0.5
G	129,020	985	3793	5.0	4895.1	4894.6	0.5
H	129,940	702	3968	4.8	4898.2	4897.7	0.5
I	130,580	680	2802	6.8	4900.7	4900.6	0.1
J	131,840	683	6087	3.1	4904.1	4903.9	0.2
K	132,260	150	964	19.7	4904.5	4904.4	0.1
L	132,315	120	1474	12.9	4908.0	4908.0	0.0
M	133,120	507	4145	4.6	4910.1	4909.6	0.5
N	135,920	1681	5083	3.7	4915.2	4914.7	0.5
O	136,550	1070/700[2]	3943	4.8	4917.8	4917.3	0.5
P	137,130	1430/720[2]	3075	6.2	4919.6	4919.6	0.0
Q	137,175	2180	5820	3.3	4921.5	4921.0	0.5
R	138,040	1575	6944	2.7	4923.4	4923.3	0.1
S	138,740	1905	8692	2.1	4925.1	4924.8	0.3
T	140,320	1083	3654	5.2	4929.0	4928.5	0.5
U	140,790	102/520[2]	1755	10.8	4930.1	4929.8	0.3
V	140,845	130/520[2]	6000	3.2	4931.8	4931.4	0.4
W	141,260	1329/835[2]	4954	3.8	4932.5	4932.0	0.5
X	141,900	850/800[3]	3110	6.1	4935.0	4934.9	0.1
Y	142,360	1182/1162[3]	5195	3.7	4937.5	4937.3	0.2
Z	145,090	1722/342[3]	4231	4.5	4940.0	4939.8	0.2
AA	145,320	100/1150[2]	3815	5.0	4941.0	4941.0	0.0

[1]Feet Above Mouth [2]Left Channel/Right Channel [3]Width/Width Within County Limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
AB	145,390	180/1150[2]	3224	5.9	4946.4	4946.4	0.0
AC	146,160	1936	12326	1.5	4947.6	4947.2	0.4
AD	146,990	170/1405[2]	3398	5.6	4949.9	4949.9	0.0
AE	147,220	100/1360[2]	5084	3.7	4951.5	4951.5	0.0
AF	147,845	180/975[2]	5113	3.7	4954.2	4953.8	0.4
AG	148,330	100/1087[2]	4787	4.0	4956.9	4956.4	0.5
AH	148,555	1039	5312	3.6	4958.0	4957.5	0.5
AI	148,625	1040	7691	2.5	4960.9	4960.9	0.0
AJ	150,510	203	2114	9.0	4961.4	4961.4	0.0
AK	151,155	269	2869	7.0	4963.6	4963.4	0.2
AL	151,370	430	4857	3.9	4964.6	4964.4	0.2
AM	151,475	777	6041	3.1	4966.4	4965.9	0.5
AN	152,320	690	5927	3.2	4966.4	4965.9	0.5
AO	153,810	1225	4560	4.2	4976.1	4976.0	0.1
AP	153,900	1250	5316	3.6	4977.4	4977.2	0.2
AQ	153,960	1303	8862	2.1	4980.0	4979.5	0.5
AR	155,100	1528	7413	2.6	4982.8	4982.6	0.2
AS	155,320	780/860[2]	6734	2.8	4982.9	4982.9	0.0
AT	155,750	1449	5452	3.5	4983.8	4983.6	0.2
AU	156,360	1520	3080	6.2	4986.7	4986.5	0.2
AV	156,520	1871	14939	1.3	4994.1	4994.1	0.0
AW	156,650	220/1915[2]	19058	1.0	4994.1	4994.1	0.0
AX	157,730	1837	12768	1.5	4994.2	4994.2	0.0
AY	158,560	1035	2947	6.4	4994.2	4994.2	0.0
AZ	159,460	269	1794	10.6	4998.9	4998.4	0.5
BA	160,120	660	2045	9.3	5000.8	5000.8	0.0
BB	160,280	1420	4728	4.0	5002.4	5002.0	0.4

[1]Feet Above Mouth [2] Left Channel/Right Channel

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
BC	160,350	1498	7119	2.7	5005.4	5004.9	0.5
BD	160,560	2281	6697	2.8	5005.4	5005.2	0.2
BE	161,280	2384	7336	2.6	5009.1	5008.9	0.2
BF	162,320	216	1953	9.7	5013.1	5012.6	0.5
BG	163,470	777	3525	5.4	5017.7	5017.2	0.5
BH	164,540	840	4406	4.5	5022.7	5022.5	0.2
BI	165,320	575	3755	5.1	5025.0	5025.0	0.0
BJ	166,760	410/310[2]	3467	5.5	5028.5	5028.5	0.0
BK	167,090	630/100[2]	2890	6.6	5030.2	5030.2	0.0
BL	167,470	1130	3482	5.5	5032.4	5032.4	0.0
BM	168,560	1040	4917	3.9	5036.5	5036.5	0.0
BN	169,090	810	3859	4.9	5037.4	5037.4	0.0
BO	170,150	1080	5791	3.3	5039.7	5039.7	0.0
BP	170,220	900	4277	4.5	5039.7	5039.7	0.0
BQ	170,280	1030	4170	4.6	5040.0	5040.0	0.0
BR	170,400	860	3361	5.7	5040.3	5040.3	0.0
BS	170,500	990	4330	4.4	5041.0	5041.0	0.0
BT	171,145	1180	4387	4.4	5042.8	5042.8	0.0
BU	172,070	1260	3039	6.3	5045.5	5045.5	0.0
BV	172,750	762	2112	7.0	5048.5	5048.5	0.0
BW	174,070	170/840[2]	1940	5.9	5057.6	5057.6	0.0
BX	174,760	160/250[2]	4108	2.7	5060.4	5060.4	0.0
BY	175,790	190/200[2]	2032	4.8	5062.9	5062.9	0.0
BZ	176,770	372	1760	5.6	5067.3	5067.3	0.0
CA	177,080	121	1443	6.8	5071.3	5071.3	0.0
CB	177,140	133[3]	1695	5.8	5072.6	5072.6	0.0
CC	177,390	1270[3]	2596	5.1	5072.9	5072.9	0.0

[1]Feet Above Mouth [2]Left Channel/Right Channel [3]Overlaps Overflow Area Floodway

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

34 BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
CD	177,900	650[2]	1943	9.8	5073.6	5073.6	0.0
CE	178,515	495	2484	8.3	5077.9	5077.9	0.0
CF	130,595	775	4816	4.3	5087.8	5087.8	0.0
CG	181,770	770	2875	7.5	5091.2	5091.2	0.0
CH	183,320	489	2063	6.7	5099.6	5099.6	0.0
CI	183,670	440	2122	6.6	5100.8	5100.8	0.0
CJ	183,890	660	3148	4.4	5102.4	5102.4	0.0
CK	183,950	480	1691	8.2	5102.9	5102.9	0.0
CL	185,000	670	2060	6.7	5108.6	5108.6	0.0
CM	185,680	440	1556	8.9	5113.4	5113.4	0.0
CN	186,510	185	2289	6.1	5124.0	5124.0	0.0
CO	186,905	240	1552	9.0	5126.0	5126.0	0.0
CP	187,270	340	1445	9.6	5129.5	5129.5	0.0
CQ	187,910	186	1098	13.2	5137.5	5137.5	0.0
CR	188,045	210	1164	12.5	5140.2	5140.2	0.0
CS	188,770	206	1522	9.5	5145.8	5145.8	0.0
CT	189,340	506	2876	5.0	5152.0	5152.0	0.0
CU	189,390	442	3605	4.0	5153.3	5153.3	0.0
CV	189,660	285	2159	6.7	5153.3	5153.3	0.0
CW	190,700	306	1331	10.9	5162.0	5162.0	0.0
CX	191,430	241	1600	9.1	5168.7	5168.7	0.0
CY	192,170	270	1362	10.6	5173.6	5173.6	0.0
CZ	193,190	305	1619	9.5	5183.0	5183.0	0.0
DA	194,250	260	1303	11.7	5192.4	5192.4	0.0
DB	194,840	190	1276	12.0	5199.6	5199.6	0.0
DC	195,150	40	799	19.1	5209.5	5209.5	0.0

[1]Feet Above Mouth [2]Overlaps Overflow Area Floodway

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
DD	195,260	150	1055	14.5	5242.2	5242.2	0.0
DE	195,300	151	1161	13.2	5243.4	5243.4	0.0
DF	196,530	118	1240	12.3	5250.9	5250.9	0.0
DG	196,950	158	1575	9.7	5253.4	5253.4	0.0
DH	197,850	460	2752	5.9	5256.9	5256.9	0.0
DI	198,170	250	1192	13.5	5258.1	5258.1	0.0
DJ	198,580	260	1261	12.8	5262.3	5262.3	0.0
DK	198,880	330	1543	10.4	5266.9	5266.9	0.0
DL	199,240	170	1176	13.7	5272.0	5272.0	0.0
DM	199,720	343	2536	6.3	5276.6	5276.6	0.0
DN	199,800	363	1578	10.2	5276.8	5276.8	0.0
DO	200,140	230	1395	11.5	5279.1	5279.1	0.0
DP	200,670	150	1159	13.9	5286.1	5286.1	0.0
DQ	200,840	111	1098	14.7	5287.4	5287.4	0.0
DR	200,920	120	1040	16.3	5303.6	5303.6	0.0
DS	201,375	112	1007	16.8	5314.6	5314.6	0.0
DT	202,095	117	1319	12.8	5325.3	5325.3	0.0
DU	202,295	100	847	20.0	5329.5	5329.5	0.0
DV	203,040	124	1049	16.1	5350.1	5350.1	0.0
DW	203,850	83	899	18.8	5365.0	5365.0	0.0
DX	204,240	100	1057	16.0	5378.4	5378.4	0.0
DY	204,545	115	856	19.7	5384.7	5384.7	0.0
DZ	204,850	160	1066	15.9	5394.8	5394.8	0.0
EA	205,280	120	893	18.9	5404.0	5404.0	0.0
EB	205,490	145	965	17.5	5409.0	5409.0	0.0
EC	205,985	131	1075	15.7	5418.5	5418.5	0.0
ED	206,390	92	955	17.7	5425.8	5425.8	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

26 BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
EE	207,330	109	1555	10.8	5457.3	5457.3	0.0
EF	207,700	84	1042	16.2	5462.4	5462.4	0.0
EG	208,620	79	897	18.8	5478.3	5478.3	0.0
EH	209,125	117	1003	16.8	5498.0	5498.0	0.0
EI	209,235	139	1681	10.1	5501.6	5501.6	0.0
EJ	209,390	117	1037	16.3	5505.8	5505.8	0.0
EK	210,015	96	943	17.3	5514.3	5514.3	0.0
EL	210,210	103	984	16.6	5518.9	5518.9	0.0
EM	210,720	190	1117	11.2	5526.0	5526.0	0.0
EN	211,235	170	1097	14.9	5532.5	5532.5	0.0
EO	211,560	240	1763	9.2	5537.2	5537.2	0.0
EP	211,760	300	1817	9.2	5540.6	5540.6	0.0
EQ	211,830	129	1290	13.0	5540.9	5540.9	0.0
ER	211,880	134	1638	10.3	5543.3	5543.3	0.0
ES	212,450	250	1604	10.5	5545.5	5545.5	0.0
ET	213,050	365	1681	10.0	5551.5	5551.5	0.0
EU	213,430	300	1591	10.6	5556.0	5556.0	0.0
EV	213,540	280	1450	11.6	5557.5	5557.5	0.0
EW	214,150	320	1625	10.3	5566.5	5566.5	0.0
EX	214,550	360	1909	8.8	5569.3	5569.3	0.0
EY	215,100	207	1511	11.1	5571.8	5571.8	0.0
EZ	215,260	201	1330	12.6	5572.7	5572.7	0.0
FA	215,815	293	1422	11.8	5579.2	5579.2	0.0
FB	216,400	482	1954	8.6	5588.3	5588.3	0.0
FC	216,970	380	2139	7.9	5592.2	5592.2	0.0
FD	217,370	291	999	10.5	5594.9	5594.9	0.0
FE	217,575	285	1095	9.6	5598.5	5598.5	0.0

[1]Feet Above Mouth

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
FF	217,700	310	1028	10.2	5602.2	5602.2	0.0
FG	218,500	155	812	12.9	5611.9	5611.9	0.0
FH	219,080	107	713	14.7	5618.2	5618.2	0.0
FI	219,365	137	806	13.0	5626.8	5626.8	0.0
FJ	220,040	80	596	17.6	5641.3	5641.3	0.0
FK	220,770	65	603	17.4	5653.9	5653.9	0.0
FL	220,895	73	629	16.7	5661.6	5661.6	0.0
FM	221,205	111	745	14.1	5667.6	5667.6	0.0
FN	221,490	81	650	16.2	5674.0	5674.0	0.0
FO	222,180	160	869	12.1	5685.0	5685.0	0.0
FP	222,865	260	914	11.5	5698.9	5698.9	0.0
FQ	223,060	260	790	13.3	5706.2	5706.2	0.0
FR	223,360	134	556	18.9	5715.0	5715.0	0.0
FS	223,660	49	473	22.2	5724.7	5724.7	0.0
FT	223,980	105	406	25.9	5737.4	5737.4	0.0
FU	224,470	90	618	17.0	5759.2	5759.2	0.0
FV	225,080	90	479	21.9	5766.8	5766.8	0.0
FW	225,375	89	675	15.6	5778.2	5778.2	0.0
FX	225,565	78	484	21.7	5779.9	5779.9	0.0
FY	225,660	80	574	18.3	5784.1	5784.1	0.0
FZ	225,820	100	898	11.7	5790.3	5790.3	0.0
GA	225,870	86	783	13.4	5794.2	5794.2	0.0
GB	226,290	115	738	14.2	5800.2	5800.2	0.0
GC	226,695	131	772	13.6	5808.4	5808.4	0.0
GD	227,700	98	692	15.2	5837.6	5837.6	0.0
GE	228,410	122	764	13.7	5850.7	5850.7	0.0
GF	229,030	160	776	13.5	5865.2	5865.2	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

28 BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
GG	229,640	160	850	12.4	5881.7	5881.7	0.0
GH	230,110	114	719	14.6	5892.0	5892.0	0.0
GI	230,260	110	715	14.7	5894.9	5894.9	0.0
GJ	230,375	140	806	13.0	5901.0	5901.0	0.0
GK	230,980	174	900	11.7	5915.6	5915.6	0.0
GL	231,185	184	909	11.6	5920.9	5920.9	0.0
GM	232,020	149	803	13.1	5939.2	5939.2	0.0
GN	232,635	86	471	22.3	5953.0	5953.0	0.0
GO	233,160	130	576	18.2	5976.7	5976.7	0.0
GP	233,370	78	326	32.2	5978.6	5978.6	0.0
GQ	233,870	125	623	16.9	6004.0	6004.0	0.0
GR	234,860	155	549	19.1	6021.3	6021.3	0.0
GS	235,165	180	888	11.8	6033.5	6033.5	0.0
GT	235,470	230	939	11.2	6038.2	6038.2	0.0
GU	235,560	240	1056	9.9	6039.8	6039.8	0.0
GV	236,220	120	487	21.6	6048.8	6048.8	0.0
GW	236,410	109	528	19.9	6055.0	6056.0	0.0
GX	237,030	150	686	15.3	6075.0	6075.0	0.0
GY	237,225	175	816	12.9	6079.2	6079.2	0.0
GZ	237,830	100	456	23.0	6088.6	6088.6	0.0
HA	238,025	113	623	16.9	6097.7	6097.7	0.0
HB	238,230	180	623	16.9	6101.1	6101.1	0.0
HC	238,430	200	932	11.2	6107.1	6107.1	0.0
HD	239,210	117	868	12.0	6114.3	6114.3	0.0
HE	239,900	125	796	13.1	6124.5	6124.5	0.0
HF	240,305	150	1090	9.5	6129.0	6129.0	0.0
HG	240,870	219	1006	10.3	6135.1	6135.1	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
HH	241,240	242	987	10.5	6139.6	6139.6	0.0
HI	241,295	239	1030	10.1	6140.7	6140.7	0.0
HJ	241,695	215	1707	6.1	6145.3	6145.3	0.0
HK	242,135	186[2]	912	11.4	6149.0	6149.0	0.0
HL	242,425	210	777	9.7	6153.2	6153.2	0.0
HM	242,675	290	1171	6.4	6156.2	6156.2	0.0
HN	242,830	325	1020	7.4	6159.2	6159.2	0.0
HO	243,125	260	897	8.4	6165.3	6165.3	0.0
HP	243,605	240	773	9.7	6178.0	6178.0	0.0
HQ	243,990	135	687	10.9	6192.9	6192.9	0.0
HR	244,615	85	467	16.1	6210.1	6210.1	0.0
HS	245,205	95	577	13.0	6228.6	6228.6	0.0
HT	245,500	120	929	8.1	6232.8	6232.8	0.0
HU	245,690	165	722	10.4	6243.7	6243.7	0.0
HV	246,190	105	520	14.4	6252.9	6252.9	0.0
HW	246,880	105	659	11.4	6274.3	6274.3	0.0
HX	247,070	140	626	12.0	6279.8	6279.8	0.0
HY	247,865	97	564	13.3	6307.6	6307.6	0.0
HZ	248,570	77	507	14.8	6327.7	6327.7	0.0
IA	249,490	95	519	14.5	6372.2	6372.2	0.0
IB	249,590	135	601	12.0	6380.5	6380.5	0.0
IC	250,200	120	728	9.9	6401.3	6401.3	0.0
ID	250,815	84	531	13.6	6411.5	6411.5	0.0
IE	251,220	120	601	12.0	6427.8	6427.8	0.0
IF	252,035	85	512	14.1	6446.3	6446.3	0.0
IG	252,440	70	545	13.2	6460.8	6460.8	0.0
IH	252,850	255	778	9.3	6471.5	6471.5	0.0

[1]Feet Above Mouth [2]Width Does Not Include Confluence With North Fork Big Thompson River

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

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BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
II	253,455	120	597	12.1	6485.1	6485.1	0.0
IJ	254,160	80	501	14.4	6497.7	6497.7	0.0
IK	254,550	100	540	13.3	6512.5	6512.5	0.0
IL	255,480	163	648	11.1	6539.4	6539.4	0.0
IM	256,220	94	524	13.7	6562.4	6562.4	0.0
IN	257,130	86	518	13.9	6597.0	6597.0	0.0
IO	258,380	120	518	13.1	6667.5	6667.5	0.0
IP	259,315	126	564	12.1	6726.6	6726.6	0.0
IQ	260,230	68	457	14.9	6775.6	6775.6	0.0
IR	260,535	98	534	12.7	6806.9	6806.9	0.0
IS	260,840	129	577	11.8	6817.4	6817.4	0.0
IT	261,860	105	623	10.9	6829.7	6829.7	0.0
IU	262,580	107	520	13.1	6841.1	6841.1	0.0
IV	264,045	90	542	12.5	6856.5	6856.5	0.0
IW	264,560	110	626	10.9	6863.3	6863.3	0.0
IX	265,180	86	549	12.4	6870.6	6870.6	0.0
IY	265,810	116	618	11.0	6879.2	6879.2	0.0
IZ	266,020	119	591	11.5	6882.1	6882.1	0.0
JA	266,640	115	609	10.5	6891.7	6891.7	0.0
JB	267,465	101	514	12.5	6905.1	6905.1	0.0
JC	268,400	125	603	10.6	6918.6	6918.6	0.0
JD	269,110	120	786	8.1	6924.6	6924.6	0.0
JE	269,410	115	657	9.7	6926.2	6926.2	0.0
JF	270,100	55	409	15.6	6932.8	6932.8	0.0
JG	270,600	210	942	6.8	6939.9	6939.9	0.0
JH	271,100	110	566	11.3	6943.7	6943.7	0.0
JI	271,800	90	550	11.6	6951.4	6951.4	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
JJ	272,095	140	636	10.1	6955.1	6955.1	0.0
JK	272,265	120	693	9.2	6957.2	6957.2	0.0
JL	272,300	115	657	9.7	6957.5	6957.5	0.0
JM	272,640	184	1151	5.6	6960.5	6960.5	0.0
JN	273,145	110	716	8.9	6961.9	6961.9	0.0
JO	273,840	130	1343	4.8	6966.7	6966.7	0.0
JP	274,245	110	647	9.9	6969.9	6969.9	0.0
JQ	274,845	85	563	11.4	6975.5	6975.5	0.0
JR	275,540	160	496	12.1	6985.2	6985.2	0.0
JS	275,690	130	516	11.6	6991.1	6991.1	0.0
JT	275,710	140	1143	5.2	6996.3	6996.3	0.0
JU	275,830	174	1470	4.1	6996.8	6996.8	0.0
JV	276,030	167	699	8.6	6996.8	6996.8	0.0
JW	276,920	164	864	6.9	7001.2	7001.2	0.0
JX	277,820	221	621	9.7	7008.0	7008.0	0.0
JY	278,735	118	656	9.1	7018.7	7018.7	0.0
JZ	279,630	96	475	12.6	7033.8	7033.8	0.0
KA	280,230	125	597	10.1	7054.9	7054.9	0.0
KB	280,940	180	439	13.7	7065.7	7065.7	0.0
KC	281,340	200	815	7.4	7075.3	7075.3	0.0
KD	282,240	86	457	13.1	7100.4	7100.4	0.0
KE	282,600	200	783	7.7	7106.8	7106.8	0.0
KF	282,675	160	1047	5.7	7109.3	7109.3	0.0
KG	283,030	185	702	8.5	7111.8	7111.8	0.0
KH	283,530	172	663	9.0	7116.7	7116.7	0.0
KI	284,035	113	499	12.0	7127.7	7127.7	0.0
KJ	284,920	115	505	11.9	7138.0	7138.0	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
KK	285,120	100	492	12.2	7145.1	7145.1	0.0
KL	285,610	142	656	8.7	7150.0	7150.0	0.0
KM	286,100	95	516	11.0	7155.8	7155.8	0.0
KN	286,600	90	449	12.7	7163.0	7163.0	0.0
KO	286,990	127	506	11.3	7170.8	7170.8	0.0
KP	287,380	104	468	12.2	7182.3	7182.3	0.0
KQ	288,265	99	479	11.9	7198.1	7198.1	0.0
KR	288,555	109	484	11.8	7207.3	7207.3	0.0
KS	289,415	180	566	10.1	7220.5	7220.5	0.0
KT	290,085	231	731	7.8	7228.6	7228.6	0.0
KU	290,685	138	528	10.8	7234.6	7234.6	0.0
KV	291,260	149	571	10.0	7240.8	7240.8	0.0
KW	291,500	190	656	8.7	7244.3	7244.3	0.0
KX	291,585	203	629	9.1	7245.4	7245.4	0.0
KY	291,950	230	664	8.6	7249.7	7249.7	0.0
KZ	292,320	183	589	9.7	7254.1	7254.1	0.0
LA	293,140	70	475	12.0	7266.9	7266.9	0.0
LB	293,540	155	481	10.8	7273.2	7273.2	0.0
LC	293,845	154	508	10.2	7279.0	7279.0	0.0
LD	294,515	120	548	9.5	7288.7	7288.7	0.0
LE	294,950	165	617	8.4	7293.6	7293.6	0.0
LF	295,350	130	550	9.5	7298.4	7298.4	0.0
LG	295,705	75	416	12.5	7301.5	7301.5	0.0
LH	295,745	100	855	6.1	7304.4	7304.4	0.0
LI	296,035	131	750	6.9	7306.4	7306.4	0.0
LJ	296,530	80	487	10.7	7309.0	7309.0	0.0
LK	296,870	235	760	6.8	7312.1	7312.1	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
LL	296,925	200	712	7.3	7313.1	7313.1	0.0
LM	297,245	180	922	5.6	7314.6	7314.6	0.0
LN	297,835	130	626	8.3	7316.6	7316.6	0.0
LO	298,290	130	563	9.2	7320.5	7320.5	0.0
LP	299,025	170	553	9.4	7328.1	7328.1	0.0
LQ	299,505	177	902	5.8	7332.5	7332.5	0.0
LR	299,900	110	497	10.5	7335.1	7335.1	0.0
LS	300,330	155	500	10.4	7343.0	7343.0	0.0
LT	300,360	170	662	7.9	7345.8	7345.8	0.0
LU	300,600	285	2233	2.3	7346.3	7346.3	0.0
LV	301,080	190	556	9.4	7346.3	7346.3	0.0
LW	301,370	174	584	8.9	7352.1	7352.1	0.0
LX	302,040	138	607	8.2	7360.1	7360.1	0.0
LY	302,530	100	432	11.6	7364.3	7364.3	0.0
LZ	302,700	150	880	5.7	7367.3	7367.3	0.0
MA	302,750	120	861	5.8	7368.3	7368.3	0.0
MB	303,140	230	1187	4.2	7372.1	7372.1	0.0
MC	303,830	140	494	10.1	7377.6	7377.6	0.0
MD	304,420	152	718	7.0	7384.1	7384.1	0.0
ME	305,310	100	441	11.3	7396.6	7396.6	0.0
MF	306,100	210	720	6.9	7406.2	7406.2	0.0
MG	306,715	230/100[2]	1143	4.4	7409.8	7409.8	0.0
MH	307,010	500/80[2]	1982	2.5	7411.0	7411.0	0.0
MI	307,890	680	810	5.9	7417.6	7417.6	0.0
MJ	308,560	700	345	13.9	7423.2	7423.2	0.0
MK	308,600	800	367	13.1	7426.6	7426.6	0.0
ML	309,650	710	3140	1.5	7426.8	7426.8	0.0
MM	310,450	110	821	5.8	7432.0	7432.0	0.0

[1]Feet Above Mouth [2]Left Channel/Right Channel

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

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BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
MN	316,430	69	397	5.5	7477.4	7477.4	7478.4	1.0
MO	327,288	43/21[2]	170	8.6	7572.6	7572.6	7572.6	0.0
MP	329,244	55/27[2]	216	6.8	7599.9	7599.9	7600.3	0.4
MQ	330,230	52/26[2]	159	9.2	7610.9	7610.9	7610.9	0.0
MR	330,955	64/32[2]	173	8.4	7620.6	7620.6	7621.2	0.6
MS	331,290	41/20[2]	173	8.4	7624.9	7624.9	7625.4	0.5
MT	331,931	95	264	5.5	7629.2	7629.2	7629.6	0.4
MU	332,348	47	145	10.1	7632.7	7632.7	7632.8	0.1
MV	332,810	48	165	8.9	7639.6	7639.6	7640.1	0.5
MW	333,247	44	179	8.1	7644.2	7644.2	7644.9	0.7
MX	333,710	71	178	8.2	7649.6	7649.6	7649.6	0.0
MY	334,153	50	164	8.9	7654.9	7654.9	7655.9	1.0
MZ	334,690	60	179	8.2	7662.2	7662.2	7662.5	0.3
NA	335,650	74	243	6.0	7674.9	7674.9	7675.5	0.6
NB	336,460	73	179	8.2	7687.4	7687.4	7687.6	0.2
NC	337,150	32	144	10.2	7695.1	7695.1	7695.5	0.4
ND	338,460	28	122	11.9	7714.3	7714.3	7714.4	0.1
NE	339,165	48	146	10.0	7724.3	7724.3	7724.3	0.0
NF	339,585	57	223	6.5	7730.1	7730.1	7730.1	0.0
NG	340,365	36	135	10.8	7743.4	7743.4	7743.5	0.1
NH	341,290	52	150	9.7	7761.6	7761.6	7761.6	0.0
NI	341,850	42	138	6.8	7773.2	7773.2	7773.2	0.0
NJ	342,850	36	99	9.5	7803.3	7803.3	7803.4	0.1

[1]Feet Above Mouth [2]Width/Width Within County

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Fox Creek							
A	160	150	312	8.8	7252.6	7252.6	0.0
B	530	90	275	10.0	7264.2	7264.2	0.0
C	915	80	252	10.9	7276.6	7276.6	0.0
D	1,330	50	256	10.7	7288.0	7288.0	0.0
E	1,770	80	319	8.6	7303.1	7303.1	0.0
F	2,280	70	275	10.0	7315.2	7315.2	0.0
G	2,760	70	287	9.6	7327.8	7327.8	0.0
H	3,260	80	289	9.5	7341.3	7341.3	0.0
I	3,775	85	301	9.1	7359.5	7359.5	0.0
J	4,260	100	328	7.3	7372.2	7372.2	0.0
K	4,750	90	307	9.0	7387.3	7387.3	0.0
L	5,615	50	232	11.9	7417.3	7417.3	0.0
M	5,980	140	303	9.1	7430.6	7430.6	0.0
N	6,650	100	259	10.6	7456.8	7456.8	0.0
O	7,010	105	295	9.3	7468.4	7468.4	0.0
P	7,950	78	261	10.3	7498.1	7498.1	0.0
West Creek							
A	260	135	454	8.8	7225.2	7225.2	0.0
B	440	142	450	8.9	7227.9	7227.9	0.0
C	550	172	506	7.9	7230.8	7230.8	0.0
D	600	170	470	8.5	7233.0	7233.0	0.0
E	1,130	168	481	8.3	7241.9	7241.9	0.0
F	1,715	80	411	9.7	7248.7	7248.7	0.0
G	2,555	100	418	9.6	7264.3	7264.3	0.0
H	2,630	105	454	8.8	7266.2	7266.2	0.0

[1]Feet Above Confluence With North Fork Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

26 **FOX CREEK- WEST CREEK**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Fall River								
A	14,173	31	78	8.7	7769.9	7769.9	7770.0	0.1
B	21,158	34	81	8.4	7921.1	7921.1	7921.1	0.0
C	21,508	22	73	9.3	7926.4	7926.4	7926.6	0.2
D	22,028	27	73	9.4	7940.3	7940.3	7940.3	0.0
E	22,452	30	75	9.0	7950.1	7950.1	7950.1	0.0
F	22,888	28	73	9.3	7961.9	7961.9	7961.9	0.0
G	23,635	23	69	9.9	7979.3	7979.3	7979.4	0.1
H	24,205	20	67	10.2	7997.2	7997.2	7997.4	0.2
I	24,612	22	68	10.0	8007.6	8007.6	8007.6	0.0
J	25,223	38	82	8.3	8032.1	8032.1	8032.4	0.3
K	25,950	24	70	9.7	8060.2	8060.2	8060.3	0.1
L	26,580	24	87	7.9	8093.2	8093.2	8093.2	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

FALL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
DF	43,785	65	444	9.9	7195.4	7195.4	0.0
DC	43,860	105	493	8.9	7200.1	7200.1	0.0
DD	43,900	121	654	6.7	7201.4	7201.4	0.0
DE	43,945	126	646	6.8	7201.7	7201.7	0.0
DF	44,370	124	486	9.1	7211.6	7211.6	0.0
DG	44,455	92	375	11.7	7212.4	7212.4	0.0
DH	44,555	166	742	5.9	7216.6	7216.6	0.0
DI	44,650	197	685	6.4	7216.8	7216.8	0.0
DJ	44,865	114	472	9.3	7219.8	7219.8	0.0
DK	45,175	102	383	10.4	7228.2	7228.2	0.0
DL	45,470	140	446	9.0	7235.9	7235.9	0.0
DM	45,560	130	472	8.5	7238.3	7238.3	0.0
DN	45,580	119	444	9.0	7238.5	7238.5	0.0
DO	45,620	130	551	7.3	7240.0	7240.0	0.0
DP	45,930	150	447	8.9	7247.3	7247.3	0.0
DQ	46,080	105	448	8.3	7250.9	7250.9	0.0
DR	46,090	110	327	11.3	7251.3	7251.3	0.0
DS	46,200	115	446	8.3	7255.3	7255.3	0.0
DT	46,385	121	401	9.2	7261.3	7261.3	0.0
DU	46,765	64	336	11.0	7275.5	7275.5	0.0
DV	46,780	62	338	10.9	7276.8	7276.8	0.0
DW	47,420	95	403	9.2	7295.8	7295.8	0.0
DX	48,165	82	354	10.5	7323.2	7323.2	0.0
DY	48,190	86	366	10.1	7325.5	7325.5	0.0
DZ	48,360	89	365	10.1	7329.0	7329.0	0.0
EA	48,865	130	392	9.4	7349.5	7349.5	0.0
EB	49,750	87	356	10.4	7375.2	7375.2	0.0
EC	50,015	70	336	11.0	7381.0	7381.0	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

38 NORTH FORK BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Redstone Creek							
A	400[1]	253	1301	9.5	5298.1	5298.1	0.0
B	530[1]	290	1543	8.0	5301.0	5301.0	0.0
C	580[1]	337	2574	4.8	5303.2	5303.2	0.0
D	610[1]	450	3487	3.5	5304.9	5304.9	0.0
E	660[1]	395	2351	5.3	5304.9	5304.9	0.0
F	1,045[1]	190	1156	10.7	5306.1	5306.1	0.0
G	1,500[1]	178	1148	10.8	5311.9	5311.9	0.0
H	2,405[1]	410	2368	5.2	5318.9	5318.9	0.0
I	3,600[1]	155	1129	11.0	5333.0	5333.0	0.0
J	4,530[1]	169	1235	10.0	5346.7	5346.7	0.0
K	4,900[1]	305	2135	5.8	5350.4	5350.4	0.0
L	5,400[1]	270	1367	9.0	5353.9	5353.9	0.0
M	6,070[1]	460	1713	7.2	5363.6	5363.6	0.0
N	6,120[1]	360	2631	4.7	5365.0	5365.0	0.0
O	6,150[1]	550	4272	2.9	5367.4	5367.4	0.0
P	6,200[1]	400	2789	4.4	5367.4	5367.4	0.0
Bobcat Gulch							
A	172[2]	226	364	5.6	6215.3	6215.3	0.0
B	320[2]	117	249	8.2	6220.5	6220.5	0.0
C	860[2]	110	266	7.7	6250.8	6250.8	0.0
Miller Fork							
A	210[2]	135	461	7.3	6897.7	6897.7	0.0
B	450[2]	110	326	10.3	6907.0	6907.0	0.0
C	500[2]	140	701	4.8	6911.3	6911.3	0.0
D	600[2]	113	515	6.5	6911.4	6911.4	0.0

[1]Feet Above Confluence With Buckhorn Creek [2]Feet Above Confluence With North Fork Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

REDSTONE CREEK-BOBCAT GULCH-MILLER FORK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
West Creek (continued)							
I	3,250[1]	160	462	8.7	7274.1	7274.1	0.0
J	3,775[1]	100	401	10.0	7284.6	7284.6	0.0
K	4,465[1]	110	387	10.3	7297.1	7297.1	0.0
L	4,550[1]	125	642	6.2	7298.7	7298.7	0.0
M	4,945[1]	135	452	8.8	7308.5	7308.5	0.0
N	5,270[1]	130	565	7.1	7311.0	7311.0	0.0
O	5,925[1]	120	386	10.4	7319.7	7319.7	0.0
P	6,220[1]	137	463	8.6	7326.1	7326.1	0.0
Q	6,270[1]	202	976	4.1	7327.8	7327.8	0.0
R	6,380[1]	105	406	9.9	7328.6	7328.6	0.0
S	6,740[1]	128	392	10.2	7335.7	7335.7	0.0
T	6,860[1]	57	301	13.3	7339.3	7339.3	0.0
U	6,960[1]	72	329	12.2	7343.0	7343.0	0.0
V	7,100[1]	110	847	4.2	7349.2	7349.2	0.0
W	7,520[1]	59	301	13.3	7354.2	7354.2	0.0
Devils Gulch							
A	50[2]	70	160	7.5	7333.6	7333.6	0.0
B	540[2]	110	179	6.7	7362.9	7362.9	0.0
C	650[2]	120	183	11.5	7370.1	7370.1	0.0
D	1,145[2]	80	156	7.7	7396.0	7396.0	0.0

[1]Feet Above Confluence With North Fork Big Thompson River
[2]Feet Above Confluence With West Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

HO **WEST CREEK-DEVILS GULCH**

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
Cache la Poudre River							
A	182,800	1386	7600	2.3	4841.2	4840.7	0.5
B	183,890	838	3020	5.8	4841.8	4841.3	0.5
C	185,150	258	1560	11.2	4843.0	4842.5	0.5
D	186,730	691	2440	7.2	4846.1	4845.6	0.5
E	188,240	319	1990	8.8	4849.6	4849.1	0.5
F	188,560	1504	4140	4.2	4850.9	4850.4	0.5
G	189,620	1281	4710	3.7	4854.4	4853.9	0.5
H	191,250	1932	5270	3.3	4858.6	4858.1	0.5
I	191,780	1147	5840	3.0	4858.8	4858.3	0.5
J	192,560	1149	5990	2.9	4865.0	4864.5	0.5
K	193,960	998	6140	2.8	4866.2	4865.7	0.5
L	195,140	866	6280	2.8	4867.6	4867.1	0.5
M	197,000	1520	5820	3.0	4870.4	4869.9	0.5
N	198,680	1167	5360	3.3	4872.6	4872.1	0.5
O	200,810	1381	4900	3.6	4876.6	4876.1	0.5
P	202,440	1154	4430	4.0	4880.1	4879.6	0.5
Q	204,620	1360/1150[2]	4890	3.6	4884.7	4884.2	0.5
R	205,430	1330	2200	8.0	4884.9	4884.4	0.5
S	208,450	1090	2010	8.7	4894.5	4894.0	0.5
T	211,040	870/600[2]	3030	5.8	4903.9	4903.4	0.5
U	213,100	650/560[2]	3400	5.1	4912.6	4912.1	0.5
V	215,870	640/440[2]	3760	4.9	4921.3	4920.8	0.5
W	220,180	780/20[3]	4140	4.5	4930.9	4930.4	0.5
X	222,180	290/260[3]	3149	6.0	4935.0	4934.5	0.5
Y	225,950	1160	14400	1.2	4944.8	4944.3	0.5

[1]Feet Above Mouth [2]Width/Width Within Larimer County [3]Left Channel/Right Channel

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

CACHE LA POUDRE RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
Cache La Poudre River							
Z	228,640	250[2]	1957	9.9	4954.0	4953.5	0.5
AA	230,170	280[2]	2183	9.0	4959.9	4959.4	0.5
AB	230,320	280[2]	2183	9.0	4964.4	4963.9	0.5
AC	230,860	350[2]	4300	4.6	4966.0	4965.5	0.5
AD	234,720	718/370[3]	3570	4.6	4974.0	4973.5	0.5
AE	236,860	1050	2530	6.4	4982.2	4981.7	0.5
AF	237,750	787	3700	4.4	4988.9	4988.4	0.5
AG	239,100	615	3810	4.3	4991.6	4991.1	0.5
AH	239,170	615	3950	4.1	4992.5	4992.0	0.5
AI	241,400	255	1600	8.4	5002.2	5001.7	0.5
AJ	242,320	155	1778	6.5	5005.8	5005.3	0.5
AK	244,110	1235	3580	2.5	5012.6	5012.1	0.5
AL	244,800	1175	3140	5.3	5016.8	5016.3	0.5
AM	245,040	1310	2690	6.2	5017.0	5016.5	0.5
AN	248,030	328	2250	7.4	5026.9	5026.4	0.5
AO	250,420	728	3015	5.5	5039.3	5038.8	0.5
AP	252,070	1223	3780	4.4	5046.7	5046.2	0.5
AQ	253,600	531	1770	9.4	5055.0	5054.5	0.5
AR	254,360	450	2225	7.5	5059.3	5058.8	0.5
AS	255,770	648	2680	6.2	5066.3	5065.8	0.5

[1]Feet Above Mouth [2]Floodway Lies Entirely Outside County Limits [3]Width/Width Within County Limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

42 CACHE LA POUDRE RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Dry Creek (Cont'd)								
AA	23,425	245	662	4.4	4,998.9	4,998.9	4,999.1	0.2
AB	24,155	266	591	4.9	5,001.6	5,001.6	5,001.6	0.0
AC	24,735	170	588	4.9	5,003.0	5,003.0	5,003.4	0.4
AD	25,638	355	648	4.5	5,005.8	5,005.8	5,005.8	0.0
AE	25,680	351	1,934	1.5	5,007.1	5,007.1	5,007.5	0.4
AF	26,385	88	449	6.5	5,007.7	5,007.7	5,008.1	0.4
AG	26,735	202	710	4.1	5,009.1	5,009.1	5,009.1	0.0
AH	27,605	75	565	5.1	5,009.5	5,009.5	5,010.3	0.8
AI	28,545	75	419	6.9	5,011.4	5,011.4	5,011.9	0.5
AJ	29,210	140	677	4.3	5,013.1	5,013.1	5,013.7	0.6
AK	29,990	160	508	5.7	5,014.4	5,014.4	5,014.7	0.3

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

DRY CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Dry Creek								
A	580	830	1,020	1.9	4,917.0	4,916.6[2]	4,917.2[2]	0.6
B	840	820	1,691	1.2	4,919.3	4,919.3	4,919.3	0.0
C	990	750	2,312	0.8	4,920.2	4,920.2	4,921.0	0.8
D	1,320	860	1,951	1.0	4,920.2	4,920.2	4,921.1	0.9
E	1,500	910	1,436	1.3	4,920.6	4,920.6	4,021.3	0.7
F	1,660	900	1,612	1.2	4,920.8	4,920.8	4,921.5	0.7
G	2,790	940	931	2.1	4,924.1	4,924.1	4,924.3	0.2
H	2,860	940	879	2.2	4,924.6	4,924.6	4,924.9	0.3
I	3,800	780	807	2.4	4,926.9	4,926.9	4,927.6	0.7
J	4,520	700	695	2.8	4,929.7	4,929.7	4,929.9	0.2
K	4,860	690	845	2.3	4,931.0	4,931.0	4,931.8	0.8
L	5,430	720	1,095	1.8	4,932.5	4,932.5	4,933.1	0.6
M	6,670	565	738	2.6	4,934.8	4,934.8	4,935.3	0.5
N	7,695	710	1,033	1.9	4,936.5	4,936.5	4,937.2	0.7
O	8,710	730	851	2.3	4,937.3	4,937.3	4,937.7	0.4
P	8,870	830[3]	4,595	0.4	4,944.0	4,944.0	4,945.0	1.0
Q	9,350	655[3]	2,014	1.0	4,944.0	4,944.0	4,945.0	1.0
R	9,985	480/80[4]	702	2.8	4,944.0	4,944.0	4,945.0	1.0
S	10,495	595[3]	571	3.4	4,947.7	4,947.7	4,948.0	0.3
T	10,835	660[3]	913	2.1	4,948.4	4,948.4	4,949.0	0.6
U	20,305	535[3]	705	4.1	4,984.1	4,984.1	4,984.8	0.7
V	20,745	1,015/160[4]	1,832	1.6	4,986.5	4,986.5	4,986.9	0.4
W	20,950	1,070	3,370	0.9	4,991.0	4,991.0	4,991.0	0.0
X	21,730	277	553	5.2	4,991.8	4,991.8	4,991.8	0.0
Y	22,495	155	502	5.8	4,995.5	4,995.5	4,995.8	0.3
Z	23,385	260	868	3.3	4,998.9	4,998.9	4,999.1	0.2

[1]Feet Above Mouth [2]Elevations Computed Without Consideration of Backwater From Cache La Poudre River
[3]Floodway Lies Entirely Outside County Limits [4]Width/Width Within County Limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

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DRY CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Boxelder Creek							
A	25	570	1506	5.4	5170.0	5169.5	0.5
B	1,135	522	1295	6.3	5174.5	5174.5	0.0
C	2,235	357	1067	7.7	5180.5	5180.5	0.0
D	2,755	260	1467	5.6	5184.5	5184.0	0.5
E	4,100	125[2]	971	8.4	5190.2	5189.7	0.5
F	4,555	120/35[2]	665	12.3	5193.3	5193.2	0.1
G	5,255	461/330[2]	1402	5.8	5198.1	5198.1	0.0
H	5,585	75/5[2]	688	11.9	5198.5	5198.5	0.0
I	9,125	108/20[2]	737	11.1	5213.9	5213.5	0.4
J	9,165	168	770	10.6	5214.6	5214.6	0.0
K	9,445	108	669	12.3	5216.8	5216.8	0.0
L	10,155	162	1058	7.8	5221.7	5221.7	0.0
M	10,875	112	664	12.3	5224.6	5224.6	0.0
N	11,635	79	643	12.8	5229.7	5229.4	0.3
O	12,395	209	1610	5.1	5233.5	5233.0	0.5

[1]Feet Above Limit of Detailed Study
[2]Width/Width Within Larimer County

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BOXELDER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Fish Creek							
A	7,405	95	348	1.1	7577.8	7577.3	0.5
B	9,530	15	66	6.0	7600.8	7600.8	0.0
C	10,215	40	71	5.6	7613.9	7613.5	0.4
D	10,430	20	46	8.6	7616.8	7616.5	0.3
E	10,470	110	308	1.3	7620.2	7619.9	0.3
F	10,680	20	48	8.3	7621.6	7621.1	0.5
G	11,030	30	43	7.6	7628.7	7628.5	0.2

[1]Feet Above Mouth

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
North Fork Big Thompson River							
ED	50,715	95	376	9.8	7405.4	7405.4	0.0
EE	51,210	85	312	11.9	7418.2	7418.2	0.0
EF	51,370	105	339	10.9	7426.3	7426.3	0.0
EG	52,020	118	414	8.9	7446.7	7446.7	0.0
Quillan Gulch							
A	50	50/40[2]	70	16.9	6489.3	6489.3	0.0
B	220	50/30[2]	75	9.1	6503.6	6503.6	0.0
C	400	20/80[2]	105	10.6	6516.5	6516.5	0.0
D	500	50	30	20.8	6523.2	6523.2	0.0
E	610	40	30	12.4	6534.0	6534.0	0.0
F	700	30	30	11.9	6534.6	6534.6	0.0
G	796	70	50	16.7	6543.0	6543.0	0.0
H	890	70	60	11.6	6555.1	6555.1	0.0
Rabbit Gulch							
A	110	116	286	7.7	6945.3	6945.3	0.0
B	240	52	211	10.4	6951.0	6951.0	0.0

[1]Feet Above Confluence With Big Thompson River [2] Left Channel/Right Channel

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH FORK BIG THOMPSON RIVER-QUILLAN GULCH-RABBIT GULCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Tributary BT-1							
A	160	30	78	7.3	7302.0	7302.0	0.0
B	290	40	63	9.0	7327.0	7327.0	0.0
Tributary BT-2							
A	130	40	184	9.0	7294.8	7294.8	0.0
B	280	60	213	7.7	7306.5	7306.5	0.0
C	690	57	167	9.9	7337.8	7337.8	0.0
Tributary BT-3							
A	060	131	213	7.3	7099.7	7099.7	0.0
B	160	66	179	8.7	7113.1	7113.1	0.0
C	250	48	154	10.1	7132.9	7132.9	0.0
Tributary BT-4							
A	140	33	62	8.1	7009.8	7009.8	0.0
B	220	21	54	9.3	7035.2	7035.2	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

TRIBUTARY BT-1-
49 **TRIBUTARY BT-2-TRIBUTARY BT-3-TRIBUTARY BT-4**

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Buckhorn Creek							
A	350	985	3103	6.5	5095.2	5095.2	0.0
B	465	948	3417	5.9	5096.1	5096.1	0.0
C	515	710	3823	5.3	5096.6	5096.6	0.0
D	545	995	7621	2.7	5100.5	5100.5	0.0
E	595	1048	7038	2.9	5100.5	5100.5	0.0
F	1,120	750	3911	5.2	5100.7	5100.7	0.0
G	2,180	670	2680	7.6	5107.6	5107.6	0.0
H	3,210	425	2153	9.4	5115.2	5115.2	0.0
I	4,190	432	2294	8.7	5122.4	5122.4	0.0
J	4,440	410	2125	9.4	5125.3	5125.3	0.0
K	4,450	410	2255	8.8	5125.5	5125.5	0.0
L	4,665	410	2219	9.0	5127.4	5127.4	0.0
M	5,475	420	2223	9.0	5132.5	5132.5	0.0
N	5,965	300	1954	10.2	5136.5	5136.5	0.0
O	6,015	225	2719	7.3	5138.0	5138.0	0.0
P	6,040	390	4652	4.3	5141.2	5141.2	0.0
Q	6,090	445	3848	4.2	5141.2	5141.2	0.0
R	6,670	145	1363	14.6	5143.5	5143.5	0.0
S	7,180	440	2725	7.3	5149.0	5149.0	0.0
T	7,685	185	1465	13.6	5149.4	5149.4	0.0
U	9,265	140	1442	13.5	5165.0	5165.0	0.0
V	10,565	275	2445	8.0	5172.1	5172.1	0.0
W	11,340	515	2933	6.7	5178.3	5178.3	0.0
X	13,175	870	4336	4.5	5189.6	5189.6	0.0
Y	14,160	710	2686	7.1	5195.7	5195.7	0.0
Z	15,210	470	2369	8.1	5202.2	5202.2	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BUCKHORN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	[1] DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Buckhorn Creek (continued)							
AA	16,600	420	2059	9.3	5210.7	5210.7	0.0
AB	18,110	645	2360	8.1	5222.7	5222.7	0.0
AC	19,635	365	2204	8.7	5232.3	5232.3	0.0
AD	20,875	370	2018	9.2	5240.3	5240.3	0.0
AE	22,410	435	1947	9.5	5251.9	5251.9	0.0
AF	24,225	525	2390	7.8	5267.4	5267.4	0.0
AG	25,570	385	2033	9.1	5279.5	5279.5	0.0
AH	27,140	845	2975	6.2	5291.0	5291.0	0.0
AI	27,610	655	2552	7.3	5294.4	5294.4	0.0
AJ	28,250	630	2503	5.5	5298.8	5298.8	0.0
AK	28,300	435	2806	4.9	5299.3	5299.3	0.0
AL	28,325	630	5190	2.3	5302.6	5302.6	0.0
AM	28,375	740	4337	3.2	5302.6	5302.6	0.0
AN	29,140	585	1980	7.0	5306.7	5306.7	0.0
AO	30,530	495	1763	7.9	5319.4	5319.4	0.0
AP	31,810	605	2038	6.8	5330.5	5330.5	0.0
AQ	33,070	490	1678	8.3	5345.4	5345.4	0.0

[1] Feet Above Confluence With Big Thompson River

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Cedar Creek							
A	370	165	682	13.8	5602.7	5602.7	0.0
B	580	125	661	14.2	5605.4	5605.4	0.0
C	780	100	885	10.6	5608.6	5608.6	0.0
Dark Gulch							
A	90	78	156	8.0	7169.0	7169.0	0.0
B	145	75	174	7.2	7175.2	7175.2	0.0
C	190	80	184	6.8	7179.0	7179.0	0.0
D	340	34	118	10.6	7186.9	7186.9	0.0
Dickson Gulch							
A	180	140	334	5.7	5550.5	5550.5	0.0
B	260	55	201	9.5	5551.8	5551.8	0.0
C	310	38	274	6.9	5553.4	5553.4	0.0
D	380	50	285	6.7	5554.0	5554.0	0.0
E	490	50	189	10.1	5556.1	5556.1	0.0
F	800	49	174	10.9	5563.8	5563.8	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

CEDAR CREEK-DARK GULCH-DICKSON GULCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	[1] DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Dry Gulch							
A	225	140	508	5.1	7434.7	7434.7	0.0
B	790	90	305	8.5	7445.1	7445.1	0.0
C	1,060	60	191	13.6	7449.0	7449.0	0.0
D	1,150	60	177	14.7	7451.0	7451.0	0.0
E	1,275	120	3876	0.7	7454.9	7454.9	0.0
F	1,975	137	308	8.4	7463.5	7463.5	0.0
G	2,235	140	304	8.6	7470.5	7470.5	0.0
H	2,720	140	274	9.5	7479.0	7479.0	0.0
I	3,170	117	291	8.9	7488.3	7488.3	0.0
J	3,540	130	313	8.3	7495.6	7495.6	0.0
K	4,020	83	264	9.8	7504.8	7504.8	0.0
L	4,425	51	219	11.9	7515.1	7515.1	0.0
M	4,710	63	234	11.1	7519.8	7519.8	0.0
N	5,085	67	239	10.9	7527.0	7527.0	0.0
O	5,540	65	238	10.9	7537.6	7537.6	0.0
Glade Road Overflow							
A	525	253	940	7.1	5057.6	5057.6	0.0
B	865	320	2160	3.7	5060.4	5060.4	0.0
C	1,990	630	3040	3.3	5063.5	5063.5	0.0
D	2,720	940	3930	2.8	5064.8	5064.8	0.0
E	3,970	1040	3374	3.3	5070.0	5070.0	0.0
F	4,310	1230	3207	3.5	5071.0	5071.0	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

DRY GULCH-GLADE ROAD OVERFLOW

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Long Gulch							
A	90	139	259	7.7	6916.1	6916.1	0.0
B	320	50	182	11.0	6939.3	6939.3	0.0
C	690	34	160	12.5	6969.6	6969.6	0.0
Noel's Draw							
A	80	65	221	10.0	7148.2	7148.2	0.0
B	290	40	183	12.0	7163.5	7163.5	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

LONG GULCH-NOEL'S DRAW

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
North Fork Big Thompson River							
A	150	200	597	10.4	6152.7	6152.7	0.0
B	350	290	844	7.2	6156.8	6156.8	0.0
C	850	250	785	7.8	6162.4	6162.4	0.0
D	1,200	210	822	7.4	6166.6	6166.6	0.0
E	1,930	300	869	7.0	6185.7	6185.7	0.0
F	2,370	55	596	10.4	6197.3	6197.3	0.0
G	2,540	110	529	11.7	6203.8	6203.8	0.0
H	2,670	100	569	10.9	6207.4	6207.4	0.0
I	2,800	345	582	10.7	6209.8	6209.8	0.0
J	3,060	176	620	10.0	6215.8	6215.8	0.0
K	3,560	465	992	6.3	6222.9	6222.9	0.0
L	4,300	380	940	6.6	6232.4	6232.4	0.0
M	4,600	225	787	7.9	6237.1	6237.1	0.0
N	5,500	340	825	7.5	6249.5	6249.5	0.0
O	6,030	310	916	6.8	6257.1	6257.1	0.0
P	6,550	270	881	7.0	6264.2	6264.2	0.0
Q	6,980	320	510	12.2	6272.0	6272.0	0.0
R	7,640	570	534	11.6	6283.7	6283.7	0.0
S	8,200	349	879	7.0	6291.3	6291.3	0.0
T	8,500	350	987	6.3	6297.9	6297.9	0.0
U	8,600	310	637	9.7	6298.6	6298.6	0.0
V	9,050	180	553	10.5	6306.8	6306.8	0.0
W	9,350	160	580	10.0	6310.1	6310.1	0.0
X	9,570	107	494	11.7	6314.4	6314.4	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH FORK BIG THOMPSON RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
Y	9,930	97	454	12.8	6322.2	6322.2	0.0
Z	10,620	80	482	12.0	6335.3	6335.3	0.0
AA	10,970	90	514	11.3	6341.4	6341.4	0.0
AB	11,280	135	610	9.5	6347.1	6347.1	0.0
AC	11,880	200	715	8.1	6355.9	6355.9	0.0
AD	12,190	190	653	8.9	6359.3	6359.3	0.0
AE	12,670	286	820	7.1	6370.2	6370.2	0.0
AF	12,935	242	742	7.8	6375.0	6375.0	0.0
AG	13,245	280	728	8.0	6379.8	6379.8	0.0
AH	13,815	154	647	9.0	6388.2	6388.2	0.0
AI	14,510	160	636	9.1	6401.7	6401.7	0.0
AJ	15,405	100	509	11.4	6420.6	6420.6	0.0
AK	15,630	201	670	8.7	6425.0	6425.0	0.0
AL	16,015	130	574	10.1	6433.8	6433.8	0.0
AM	16,430	253	709	8.2	6444.5	6444.5	0.0
AN	16,680	150	589	9.8	6451.9	6451.9	0.0
AO	16,700	160	1040	5.6	6454.7	6454.7	0.0
AP	17,835	205	633	9.2	6474.6	6474.6	0.0
AQ	17,900	210	650	8.9	6476.4	6476.4	0.0
AR	18,500	130	525	10.5	6491.2	6491.2	0.0
AS	18,520	140	586	9.4	6495.2	6495.2	0.0
AT	18,980	110	515	10.7	6508.5	6508.5	0.0
AU	19,370	169	626	8.8	6526.2	6526.2	0.0
AV	19,600	126	562	9.8	6534.5	6534.5	0.0
AW	19,630	135	723	7.6	6535.8	6535.8	0.0
AX	19,860	83	450	12.2	6543.9	6543.9	0.0
AY	19,950	81	417	13.2	6551.3	6551.3	0.0
AZ	20,590	78	410	13.4	6563.6	6563.6	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH FORK BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA, (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
BA	21,810	89	458	12.0	6591.5	6591.5	0.0
BB	22,550	90	475	11.6	6622.1	6622.1	0.0
BC	22,580	80	400	13.8	6624.4	6624.4	0.0
BD	23,090	148	551	10.0	6640.0	6640.0	0.0
BE	23,615	93	460	12.0	6659.6	6659.6	0.0
BF	23,650	93	477	11.5	6660.9	6660.9	0.0
BG	24,050	76	414	13.3	6675.1	6675.1	0.0
BH	24,530	89	441	12.5	6695.9	6695.9	0.0
BI	25,090	53	379	14.5	6724.2	6724.2	0.0
BJ	26,090	87	443	12.4	6760.7	6760.7	0.0
BK	26,600	76	412	13.3	6787.7	6787.7	0.0
BL	26,825	79	419	13.1	6808.5	6808.5	0.0
BM	27,305	90	455	12.1	6827.6	6827.6	0.0
BN	27,985	117	544	10.1	6844.9	6844.9	0.0
BO	28,260	234	1056	5.2	6848.3	6848.3	0.0
BP	28,780	250	724	7.6	6857.1	6857.1	0.0
BQ	28,845	270	764	7.2	6859.6	6859.6	0.0
BR	29,225	100	531	10.4	6866.1	6866.1	0.0
BS	29,495	86	444	12.4	6869.3	6869.3	0.0
BT	29,700	115	518	10.6	6877.3	6877.3	0.0
BU	30,190	140	553	9.9	6887.9	6887.9	0.0
BV	30,615	232	705	6.8	6896.5	6896.5	0.0
BW	31,150	257	662	7.3	6904.6	6904.6	0.0
BX	31,700	230	511	9.4	6910.8	6910.8	0.0
BY	32,410	185	622	7.7	6922.0	6922.0	0.0
BZ	32,830	252	833	5.8	6930.5	6930.5	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH FORK BIG THOMPSON RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET NGVD)
CA	32,875	270	639	7.5	6930.6	6930.6	0.0
CB	33,480	240	776	6.2	6943.7	6943.7	0.0
CC	33,905	95	422	11.4	6947.4	6947.4	0.0
CD	34,840	186	592	8.1	6969.3	6969.3	0.0
CE	34,880	195	641	7.5	6970.5	6970.5	0.0
CF	35,950	95	390	12.3	6992.4	6992.4	0.0
CG	36,380	130	473	10.1	6999.5	6999.5	0.0
CH	36,715	88	409	11.7	7006.2	7006.2	0.0
CI	36,990	115	473	10.1	7013.5	7013.5	0.0
CJ	37,030	101	432	11.1	7015.6	7015.6	0.0
CK	37,710	119	488	9.8	7032.6	7032.6	0.0
CL	37,730	129	500	9.6	7033.8	7033.8	0.0
CM	38,140	175	539	8.9	7042.1	7042.1	0.0
CN	38,160	142	805	6.0	7044.4	7044.4	0.0
CO	38,605	99	464	10.3	7055.2	7055.2	0.0
CP	38,815	116	480	10.0	7064.1	7064.1	0.0
CQ	39,035	175	560	8.6	7068.8	7068.8	0.0
CR	40,195	86	418	11.5	7090.3	7090.3	0.0
CS	40,970	70	388	12.4	7113.1	7113.1	0.0
CT	41,115	110	479	10.0	7115.6	7115.6	0.0
CU	41,140	155	721	6.7	7119.6	7119.6	0.0
CV	41,425	109	452	10.6	7129.9	7129.9	0.0
CW	41,665	75	388	12.4	7139.8	7139.8	0.0
CX	41,865	124	483	9.9	7152.1	7152.1	0.0
CY	42,470	97	413	11.6	7166.4	7166.4	0.0
CZ	42,590	95	429	11.2	7172.6	7172.6	0.0
DA	43,010	81	406	11.8	7178.6	7178.6	0.0

[1]Feet Above Confluence With Big Thompson River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH FORK BIG THOMPSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Black Canyon Creek								
A	5,575	9	29	7.9	7587.7	7587.7	7590.2	0.5
B	6,182	15	45	5.1	7596.4	7596.4	7596.6	0.2
C	6,550	33	56	4.1	7598.8	7598.8	7599.1	0.3
D	6,740	17	30	7.6	7601.2	7601.2	7601.2	0.0
E	7,215	10	37	6.2	7606.9	7606.9	7607.5	0.6
F	7,525	6	21	10.7	7610.7	7610.7	7610.7	0.0

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOODWAY DATA

BLACK CANYON CREEK

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5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail affecting the unincorporated areas of Larimer County.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following table for more than 20 percent of the reach:

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of Larimer County are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Big Thompson River							
Reach 1	0245	-2.6	-1.1	3.1	025	A5	Varies - See Map
Reach 2	0245	-3.9	-1.2	2.8	040	A8	Varies - See Map
Reach 3	0245	-5.3	-1.3	2.6	055	A11	Varies - See Map
Reach 4	0245	-6.3	-1.2	3.0	065	A13	Varies - See Map
Reach 5	0245	-3.4	-1.1	2.4	035	A7	Varies - See Map
Reach 6	0245,0244	-2.0	-0.8	2.4	020	A4	Varies - See Map
Reach 7	0244	-5.5	-1.7	3.9	055	A11	Varies - See Map
Reach 8	0244	-3.4	-0.9	2.3	035	A7	Varies - See Map
Reach 9	0244	-1.6	-0.8	2.5	015	A3	Varies - See Map
Reach 10	0244	-4.7	-1.2	2.3	045	A9	Varies - See Map
Reach 11	0244,0232 0243,0231	-3.0	-1.0	2.9	030	A6	Varies - See Map
Reach 12	0243,0231	-1.1	-0.3	2.3	010	A2	Varies - See Map
Reach 13	0231	-3.8	-1.2	3.1	040	A8	Varies - See Map
Reach 14	0231	-5.5	-1.4	4.5	055	A11	Varies - See Map
Reach 15	0231	-3.9	-1.2	4.0	040	A8	Varies - See Map
Reach 16	0231	-6.1	-2.0	6.4	060	A12	Varies - See Map
Reach 17	0231	-4.9	-2.0	6.4	050	A10	Varies - See Map
Reach 18	0231,0230	-5.8	-2.0	6.4	060	A12	Varies - See Map
Reach 19	0230	-8.2	-2.6	7.1	080	A16	Varies - See Map
Reach 20	0230	-6.3	-2.1	6.0	065	A13	Varies - See Map
Reach 21	0230	-4.9	-1.3	4.0	050	A10	Varies - See Map
Reach 22	0230,0229 0228,0240	-3.4	-1.1	2.9	035	A7	Varies - See Map
Reach 23	0228,0240 0238	-2.3	-0.7	1.9	025	A5	Varies - See Map
Reach 24	0239,0250	-0.8	-0.2	0.4	010	A2	Varies - See Map

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

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BIG THOMPSON RIVER

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Tributary BT-1							
Reach 1	0239	-1.3	-0.7	0.9	015	A3	Varies - See Map
Tributary BT-2	0239	-1.5	-0.6	0.9	015	A3	Varies - See Map
Tributary BT-3							
Reach 1	0240	-1.3	-0.5	0.8	015	A3	Varies - See Map
Tributary BT-4							
Reach 1	0240	-2.6	-1.0	1.9	025	A5	Varies - See Map
Reach 2	0240	-1.4	-0.6	0.9	015	A3	Varies - See Map
Buckhorn Creek							
Reach 1	0231	-3.8	-1.1	2.5	040	A8	Varies - See Map
Reach 2	0231,0218 0205	-3.0	-0.9	2.0	030	A6	Varies - See Map
Cedar Creek							
Reach 1	0230	-4.9	-1.7	5.1	050	A10	Varies - See Map
Dark Gulch							
Reach 1	0239	-1.9	-0.7	1.4	020	A4	Varies - See Map
Reach 2	0239	-1.1	-0.4	0.6	010	A2	Varies - See Map
Dickson Gulch							
Reach 1	0230	-2.7	-0.8	3.9	025	A5	Varies - See Map
Reach 2	0230	-1.6	-0.5	1.1	015	A3	Varies - See Map

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

TRIBUTARY BT-1–TRIBUTARY BT-2–TRIBUTARY BT-3–TRIBUTARY BT-4–
BUCKHORN CREEK–CEDAR CREEK–DARK GULCH–DICKSON GULCH

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Dry Gulch							
Reach 1	0239	-1.7	-0.5	1.4	015	A3	Varies - See Map
Glade Road Overflow							
Reach 1	0232	-2.9[4]	-1.2	0.3	030	A6	Varies - See Map
Reach 2	0231,0232	-7.2[4]	-1.2	0.4	070	A14	Varies - See Map
Reach 3	0231	-5.1[4]	-1.3	0.9	050	A10	Varies - See Map
Long Gulch							
Reach 1	0228	-1.8	-0.5	1.4	020	A4	Varies - See Map
Noel's Draw							
Reach 1	0240	-1.9	-0.6	1.8	020	A4	Varies - See Map
North Fork Big Thompson River							
Reach 1	0229,0228, 0214	-3.0	-1.0	3.2	030	A6	Varies - See Map
Quillan Gulch							
Reach 1	0229	-0.9	-0.2	0.9	010	A2	Varies - See Map
Rabbit Gulch							
Reach 1	0228,0240	-2.0	-0.2	0.9	020	A4	Varies - See Map
Redstone Creek							
Reach 1	0218	-2.3	-1.0	1.7	025	A5	Varies - See Map
Reach 2	0218,0205	-4.8	-1.4	3.1	050	A10	Varies - See Map

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

DRY GULCH-GLADE ROAD OVERFLOW-LONG GULCH-NOEL'S DRAW-
NORTH FORK BIG THOMPSON RIVER-QUILLAN GULCH-RABBIT GULCH-REDSTONE GULCH

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Bobcat Gulch							
Reach 1	0229	-1.0	-0.3	0.6	010	A2	Varies - See Map
Miller Fork							
Reach 1	0215	-1.8	-0.5	1.7	020	A4	Varies - See Map
Fox Creek							
Reach 1	0214	-3.0	-1.0	3.2	030	A6	Varies - See Map
Reach 2	0214	-1.8	-0.5	1.7	020	A4	Varies - See Map
West Creek							
Reach 1	0214	-3.0	-1.0	3.2	030	A6	Varies - See Map
Reach 2	0214,0227	-2.1	-0.6	2.3	020	A4	Varies - See Map
Devils Gulch							
Reach 1	0227	-0.9	-0.3	0.8	010	A2	Varies - See Map
Cache La Poudre River							
Reach 1	0208,0194	-0.9	-0.3	0.3	010	A2	Varies - See Map
Reach 2	0194,0193	-4.0	-2.0	0.6	040	A8	Varies - See Map
Reach 3	0194,0193, 0179,0178, 0163	-2.1	-0.7	0.9	020	A4	Varies - See Map
Dry Creek							
Reach 1	0178,0179, 0164,0163	-0.6	-0.2	0.4	005	A1	Varies - See Map
Reach 2	0164,0163	-3.1	-1.0	1.5	030	A6	Varies - See Map

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

BOBCAT GULCH-MILLER FORK-FOX CREEK-WEST CREEK-DEVILS GULCH-CACHE LA POUDRE RIVER-DRY CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Boxelder Creek							
Reach 1	0150,0135	-0.9	-0.3	0.5	010	A2	Varies - See Map
Reach 2	0135	-1.9	-0.3	0.7	020	A4	Varies - See Map
Reach 3	0135	-2.5	-0.7	1.3	025	A5	Varies - See Map
Reach 4	0135	-3.4	-1.2	2.2	035	A7	Varies - See Map
Reach 5	0135	-2.6	-0.9	1.8	025	A5	Varies - See Map
Fall River							
Reach 1	0237,0238	-0.6	-0.2	0.3	005	A1	Varies - See Map
Fish Creek							
Reach 1	0251	-3.6	-0.7	1.2	035	A7	Varies - See Map
Reach 2	0251	-1.3	-0.4	0.9	015	A3	Varies - See Map
Black Canyon Creek	0238	-2.2	-0.2	0.3	020	A4	Varies - See Map
Reach 1	0238	-0.7	-0.2	0.4	005	A1	Varies - See Map
Reach 2							

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

LARIMER COUNTY, CO
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

BOXELDER CREEK-FALL RIVER-FISH CREEK

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Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zones A1-A14, and A16:	Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other local water-control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flood hazard; not subdivided.

The flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community are summarized in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Larimer County is, for insurance purposes, the principal product of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the NFIP.

6.0 OTHER STUDIES

The COE completed a Flood Plain Information report on the Big Thompson River in December 1971, which included delineation of the 100- and 500-year flood plains and profiles in the vicinity of Loveland (Reference 13). The hydrologic and hydraulic data developed by the COE were used in this report; therefore, the studies are in complete agreement.

In May 1970, the SCS published a Flood Plain Information report for the Boxelder Creek Watershed (Reference 32). The re ort presented flood

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plains and profiles for the watershed with no flood detention structures and with all structures constructed. Because this study is based upon existing conditions with some structures completed, no agreement between profiles or flood boundaries can be expected.

In February 1971, the SCS published a Watershed Work Plan for the Boxelder Creek Watershed (Reference 8). The discharges developed for the work plan were used in this study. There were no profiles developed for the work plan.

In August 1981, Simons, Li & Associates, Inc., completed a Master Drainageway Planning Study for Boxelder Creek and Cooper Slough in the vicinity of Fort Collins (Reference 9). The approximate flood boundaries for both creeks in this area were taken from the 100-year flood plain boundaries presented in this report.

Gingery Associates, Inc., completed a Major Drainageway Planning report for Dry Creek for the City of Fort Collins and Larimer County in April 1980 (Reference 1). The hydrologic and hydraulic data presented in this report were used in this study to update detailed flooding information on Dry Creek.

The COE completed Flood Plain Information reports on the Cache La Poudre River in the study area in October 1973 (Reference 6) and October 1975 (Reference 28). The discharges and water-surface elevations used in this Flood Insurance Study were taken from the COE reports; therefore, they are in complete agreement.

The COE completed a Flood Plain Information report on the Little Thompson River through Larimer County in June 1977 (Reference 27). The approximate flood boundaries for the Little Thompson River were taken from the 100-year flood plain boundaries developed by the COE, and are in agreement with this Flood Insurance Study.

Flood Insurance Studies have been completed for the Cities of Fort Collins and Loveland and for the Town and Wellington (References 33, 34, and 35, respectively). These Flood Insurance Studies are in agreement with this Flood Insurance Study.

A revised Flood Insurance Study is being prepared for the Town of Estes Park (Reference 36), and will agree with this Flood Insurance Study.

A Flood Hazard Boundary Map was previously published for unincorporated areas of Larimer County (Reference 31). This Flood Insurance Study supersedes the previous Flood Hazard Boundary Map.

A Flood Insurance Study was previously published in 1979 for unincorporated areas of Larimer County (Reference 37). This study supersedes the previous Flood Insurance Study.

This study is authoritative for the purposes of the NFIP; data presented herein either supersede or are compatible with all previous determinations.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Building 710, Denver Federal Center, Lakewood, Colorado 80225.

8.0 BIBLIOGRAPHY AND REFERENCES

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